HCD-J3MD

SERVICE MANUAL

AEP Model
UK Model
E Model
Chinese Model

Self Diagnosis Supported model

HCD-J3MD is the amplifir, CD, MD, TAPE deck and tuner section in CMT-J3MD.

US and foreign patents licensed from Dolby Laboratories Licensing Corporation.

CD SECTION	Model Name Using Similar Mechanism	HCD-MD373
	Mechanism Type	CDM55A-5SBD32
	Base Unit Type	BU-5SBD32
	Optical Pick-up Type	KSS-213BA/F-NP
MD SECTION	Model Name Using Similar Mechanism	HCD-MD373
	Mechanism Type	MDM-5H
	Optical Pick-up Type	KMS-260B/J1N
CASSETTE SECTION	Model Name Using Similar Mechanism	NEW
	Tape Transport Mechanism Type	CMAL1Z027A

SPECIFICATIONS

Amplifier section

European model:

DIN power output (Rated): 20 + 20 watts (6 ohms at 1 kHz, DIN, 230 V)
Continuous RMS power output (Reference): 25 + 25 watts (6 ohms at 1 kHz, 10% THD, 230 V)
Music power output (Reference): 45 + 45 watts

Other models:

DIN power output (Rated): 20 + 20 watts (6 ohms at 1 kHz, DIN, 220 V)
Continuous RMS power output (Reference): 25 + 25 watts (6 ohms at 1 kHz, 10% THD, 220 V)
Peak Music Power Output: 400 watts
Inputs
LINE IN (stereo minijack): voltage 250 mV, impedance 47 kΩ
Outputs
PHONES (stereo minijack): accepts headphones of 8 Ω or more.
SPEAKER: accepts impedance of 6 to 16 Ω

CD player section

System: Compact disc and digital audio system
Laser: Semiconductor laser (λ=780 nm)
Emission duration: continuous
Laser output: Max. 44.6 μW*
* This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block with 7 mm aperture.
Frequency response: 2 Hz – 20 kHz

MD deck section

System: MiniDisc digital audio system
Laser: Semiconductor laser (λ=780 nm)
Emission duration: continuous
Laser output: Max. 44.6 μW*
* This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block with 7 mm aperture.
Sampling frequency: 44.1 kHz
Frequency response: 5 Hz – 20 kHz

Tape deck section

Recording system: 4-track 2-channel stereo
Frequency response: (DOLBY NR OFF) 40 – 13,000 Hz (±3 dB), using Sony TYPE I cassettes 40 – 14,000 Hz (±3 dB), using Sony TYPE II cassettes

Tuner section

FM stereo, FM/AM superheterodyne tuner

FM tuner section

Tuning range
Tourist model: 76.0 – 108.0 MHz
Other models: 87.5 – 108.0 MHz (50 kHz step)
Aerial: FM lead aerial
Aerial terminals: 75 Ω unbalanced
Intermediate frequency: 10.7 MHz

— Continued on next page —

COMPACT COMPONENT Hi-Fi SYSTEM

SONY®

AM tuner section

Tuning range
European model: 531 – 1,602 kHz (with the interval set at 9 kHz)
Other models: 531 – 1,602 kHz (with the interval set at 9 kHz) 530 – 1,710 kHz (with the interval set at 10 kHz)
Aerial: AM loop aerial; External aerial terminals
Intermediate frequency: 450 kHz

General

Power requirements
European model: 230 V AC, 50/60 Hz
Other models: 220 V AC, 50/60 Hz
Power consumption: 70 watts during normal operation; Approx. 3 watts in standby mode (clock displayed); Approx. 1 watt in standby mode (clock not displayed)
Dimensions (w/h/d) incl. projecting parts and controls
Amplifier/Tuner/Tape/MD/CD section: Approx. 175 × 250 × 320 mm
Mass
Amplifier/Tuner/Tape/MD/CD section: Approx. 6.1 kg

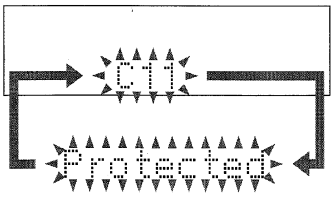
Design and specifications are subject to change without notice.

SELF-DIAGNOSIS FUNCTION

The self-diagnosis function consists of error codes for customers which are displayed automatically when errors occur, and error codes which show the error history in the test mode during servicing. For details on how to view error codes for the customer, refer to the following box in the instruction manual. For details on how to check error codes during servicing, refer to the following "Procedure for using the Self-Diagnosis Function (Error History Display Mode)".

Self-diagnosis display

This system has a Self-diagnosis display function to let you know if there is a system malfunction. The display shows a code made up of three letters and a message alternately to show you the problem. To solve the problem refer to the following list. If any problem persists, consult your nearest Sony dealer.



C11/Protected
The MD is protected against erasure.
→Remove the MD and slide the tab to close the slot (page 32).

C12/Cannot Copy
You tried to record a CD or MD with a format that the system does not support, such as a CD-ROM.
→Remove the disc and turn off the system once, then turn it on again.

C13/REC Error
Recording could not be performed properly.
→Move the system to a stable place, and start recording over from the beginning.
The MD is dirty or scratched, or the MD does not meet the standards.
→Replace the MD and start recording over from the beginning.

C13/Read Error
The MD deck cannot read the disc information properly.
→Remove the MD once, then insert it again.

C14/Toc Error
The MD deck cannot read the disc information properly.
→Replace the MD.
→Erase all the recorded contents of the MD using the All Erase function on page 46.

C41/Cannot Copy
The sound source is a copy of a commercially available music software, or you tried to record a CD-R (Recordable CD).
→The Serial Copy Management System prevents making a digital copy (see page 68). You cannot record a CD-R.

Procedure for using the Self-Diagnosis Function (Error History Display Mode).

Note: Perform the self-diagnosis function in the "error history display mode" in the test mode. The following describes the least required procedure. Be careful not to enter other modes by mistake. If you set other modes accidentally, press the MENU/NO "R" button to exit the mode.

1. When the power ON, press the I/⏻ button while pressing the □ button and ● TAPE button together.
2. Press the ⏮◀◀/I/CD/TUNING – button or ▶▶▷▷⏭/TUNING + button and when "[Service]" is displayed, press the ENTER/YES "R" button. (If nothing is displayed, press the FUNCTION button and set the function to "MD".)
3. Press the ⏮◀◀/TUNING – button or ▶▶▷▷⏭/TUNING + button and display "ERR DP MODE".
4. Pressing the ENTER/YES "R" button sets the error history mode and displays "total rec".
5. Select the contents to be displayed or executed using the ⏮◀◀/TUNING – button or ▶▶▷▷⏭/TUNING + button.
6. Pressing the SYNCHRO REC button will display the message "CD-MD SYNC ?" and press ENTER/START to show or to execute the contents selected.
7. Pressing the SYNCHRO REC button another time returns to step 4.
8. Pressing the MENU/NO "R" button displays "ERROR DP MODE" and exits the error history mode.
9. To exit the test mode, press the REPEAT/DOLBY NR/STEREO/MONO button. The unit sets into the STANDBY state, and the test mode ends.

Note 1: About "R"
As this unit has only a few buttons, some operations require the use of remote commander (RM-SJ373/provided with unit: 1-418-554-11) buttons. These operations are indicated as "R" in this manual.
Example: MENU/NO "R" ...Press the MENU/NO button of the remote commander.

Note 2:
Incorrect operations may be performed if the test mode is not set properly.
In this case, press the RESET button of the back panel.(Timing of pressing three buttons simultaneously is difficult and will put the machine into improper mode.)

ITEMS OF ERROR HISTORY MODE ITEMS AND CONTENTS

Selecting the Test Mode

Display	Details of History
total rec	Displays the recording time. Displayed as "r□□□□□□h". The displayed time is the total time the laser is set to the high power state. This is about 1/4 of the actual recording time. The time is displayed in decimal digits from 0h to 65535h.
total play	Displays the play time. Displayed as "p□□□□□□h". The time displayed is the total actual play time. Pauses are not counted. The time is displayed in decimal digits from 0h to 65535h.
retry err	Displays the total number of retries during recording and number of retry errors during play. Displayed as "r□□ p□□". "r" indicates the retries during recording while "p" indicates the retry errors during play. The number of retries and retry errors are displayed in hexadecimal digits from 00 to FF.
total err	Displays the total number of errors. Displayed as "total □□". The number of errors is displayed in hexadecimal digits from 00 to FF.
err history	Displays the 10 latest errors. Displayed as "0□ E@@". □ indicates the history number. The smaller the number, the more recent is the error. (00 is the latest). @@ indicates the error code. Refer to the following table for the details. The error history can be switched by pressing the I◁◁ ◀◀/TUNING – button or ▶▶ ▷▷I/TUNING + button.
er refresh	Mode which erases the "retry err", "total err", and "err history" histories. When returning the unit to the customer after completing repairs, perform this to erase the past error history, After pressing the SYNCHRO REC button and "CD-MD SYNC?" is displayed, press the ENTER/START button when "er refresh" appears, press ENTER/YES "R" to erase the history. "Complete!" will be displayed momentarily. Be sure to check the following when this mode has been executed. • The data has been erased. • The mechanism operates normally when recording and play are performed.
tm refresh	Mode which erases the "total rec" and "total play" histories. These histories serve as approximate indications of when to replace the optical pickup. If the optical pickup has been replaced, perform this operation and erase the history. After pressing the SYNCHRO REC button to show "CD-MD SYNC." Press ENTER/START and "tm refresh?" is displayed, press the ENTER/YES "R" button to erase the history. "Complete!" will be displayed momentarily. Be sure to check the following when this mode has been executed. • The data has been erased. • The mechanism operates normally when recording and play are performed.

Table of Error Codes

Error Code	Details of Error	Error Code	Details of Error
E00	No error	E05	FOK has lost servo lock.
E01	Read error. PTOC cannot be read (DISC ejected)	E06	Cannot focus (Servo has lost lock.)
		E07	Recording retry
E02	TOC error. UTOC error (DISC not ejected)	E08	Recording retry error
		E09	Playback retry error (Access error)
E03	Loading error		
E04	Address cannot be read (Servo has deviated)	E0A	Play retry error (C2 error)

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

CAUTION : INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.
ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSAETTELSE FOR STRÅLING.
VORSICHT : UNSICHTBARE LASERSTRAHLUNG. WENN ABDECKUNG GEÖFFNET UND SICHEREITSVERRIEGELUNG ÜBERBRÜCKT. NICHT DEM STRAHL AUSSETZEN.
VARO! : AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
VARNING : OSYNLING LASERSTRÅLING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.
ADVERSEL : USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.
VIGYAZAT! : A BURKOLAT NYITÁSAKOR LÁTHATATLAN LÉZERSUGÁRVESZÉLY! KERÜLJE A BESUGÁRZÁST!

This caution label is located inside the unit.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of soldering iron around 270˚C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

与安全有关的零部件须知

在原理图上用阴影及 ⚠ 标记来识别的零部件在安全操作上是具有关键性的。这些零部件要用本手册中所示的部件号对应的索尼零部件进行更换。

在安全操作上具有关键性的电路调整与索尼公司出版的维修手册完全一致。在更换关键零部件时或怀疑动作失常时，请进行这些调整操作。

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SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

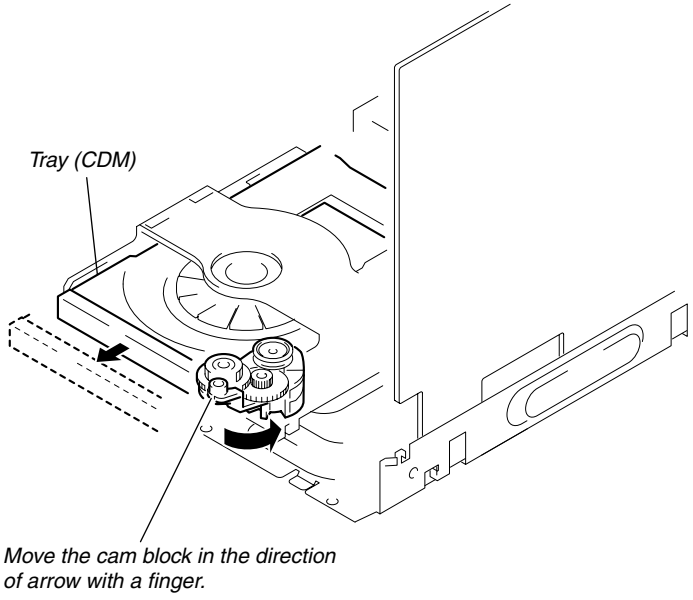
ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

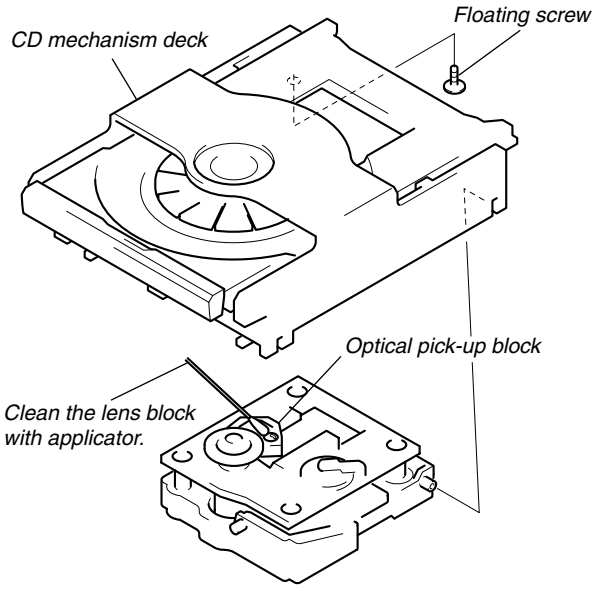
SECTION 1
SERVICING NOTE

Note 1: "R"
As this unit has only a few buttons, some operations require the use of remote commander (provided with RM-SJ373/unit: 1-418-554-11) buttons. These operations are indicated as "R" in this manual.
Example: MENU/NO "R" ...Press the MENU/NO button of the remote commander.

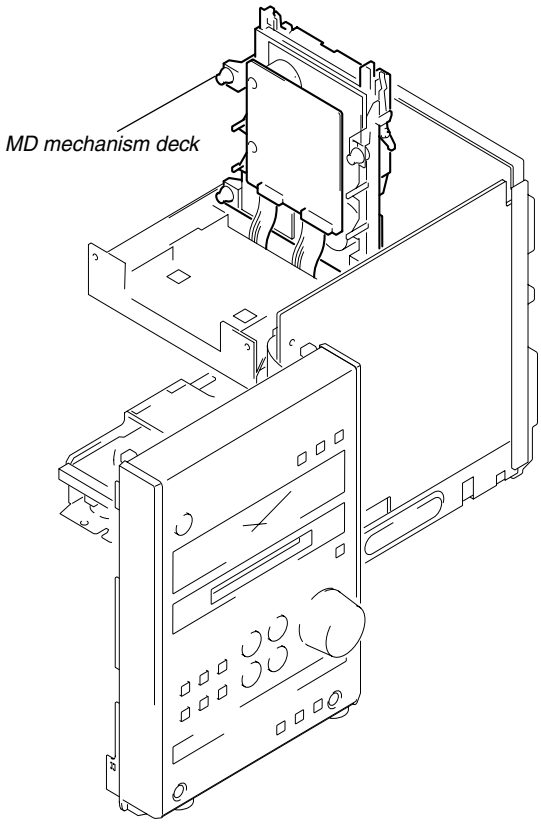
DRAWING OUT THE TRAY DURING POWER OUT



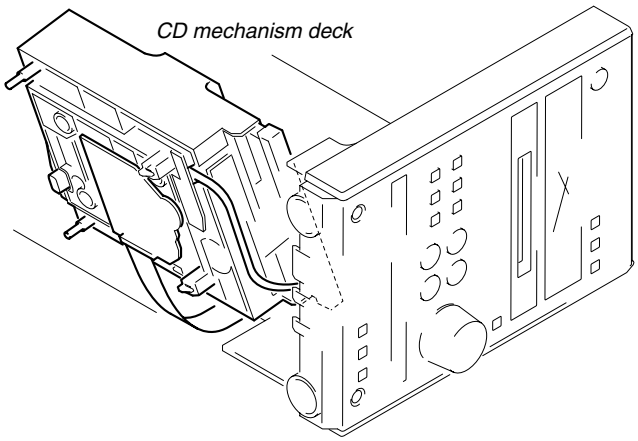
CLEANING THE OPTIAL PICKUP (CD PLAYER)



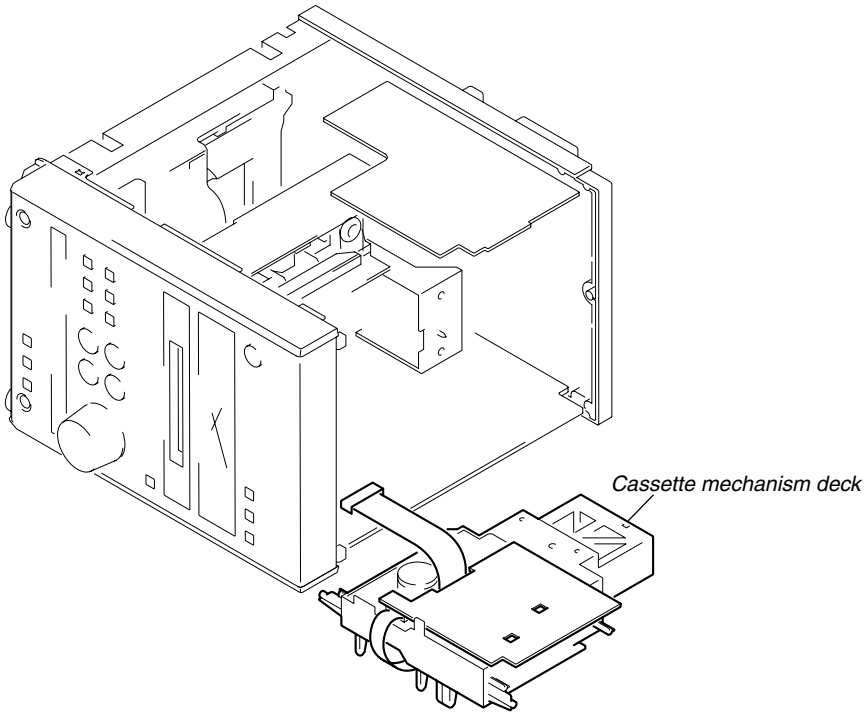
SERVICE POSITION OF THE MD MECHANISM



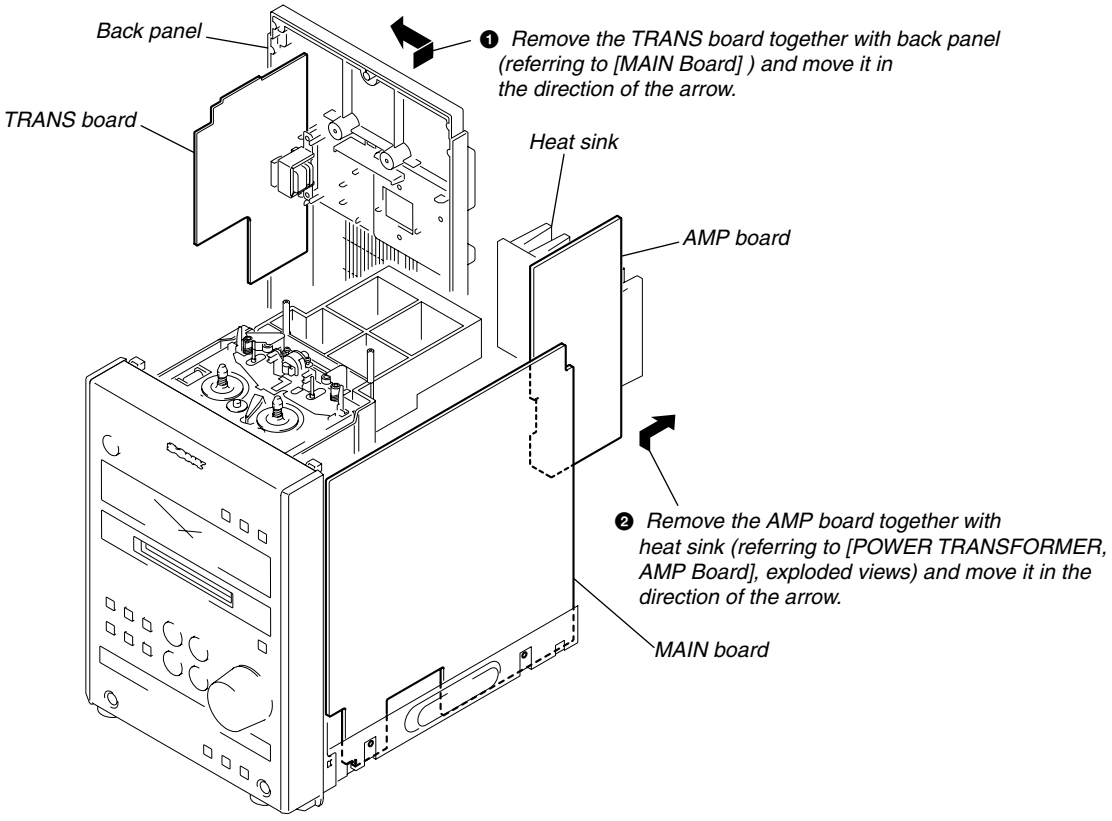
SERVICE POSITION OF THE CD MECHANISM



SERVICE POSITION OF THE CASSETTE MECHANISM DECK



SERVICE POSITION OF THE POWER BOARD


Back panel
❶ Remove the TRANS board together with back panel (referring to [MAIN Board]) and move it in the direction of the arrow.
TRANS board
Heat sink
AMP board
❷ Remove the AMP board together with heat sink (referring to [POWER TRANSFORMER, AMP Board], exploded views) and move it in the direction of the arrow.
MAIN board

CD Text Display

- This unit displays CD text.
  Text is displayed for the first 50 track only and will not be displayed from the 51st track onwards. Do not suspect a fault in this case.
  In some cases, some special characters will not be displayed and may be replaced by other characters. D onot suspect a fault in this case.

Cold Reset

- The cold reset clears all data including preset data stored in the RAM to initial conditions. Execute this mode when returning the set to the customer.

Procedure 1: (recommended)
Press the RESET button on the back panel.
Procedure 2:

1. When the power ON, press the I/⏻ button while pressing the PLAY MODE/DIRECTION/TUNING MODE button and ⏏ (MD) buttons together.
2. "COLD RESET" is displayed on the fluorescent indicator tube and reset is executed.

Hot Reset

- This mode reset the preset data kept in the memory. The hot reset mode functions same as if the power cord is plugged in and out.

Procedure :

1. When the power ON, press the I/⏻ button while pressing the PLAY MODE/DIRECTION/TUNING MODE button and MD ▷II buttons together.
2. Turn off the unit and reset is executed.

LED and Fluorescent Indicator Tube All Lit, Key Check Mode

Procedure :

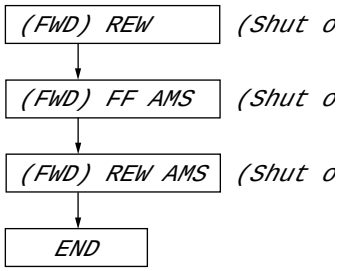
1. When the power ON, press the I/⏻ button while pressing the PLAY MODE/DIRECTION/TUNING MODE button and CD ▷II buttons together.
2. LEDs and fluorescent indicator tube are all turned on.
3. Press ⏏ (MD) to enter the model destination indecation mode. "MK 40J" appears.
4. Every pressing of ⏏ (MD) changes the display in the following order. MC Version → CD Version → ST Version → TC Version → TA Version → TM Version → model destination desplay.
5. Press ENTER/START and the date appears as "1999/19/03"
6. Press MD II▷ to enter the key check mode.
7. In the key check mode, the fluorescent indicator tube displays "Key 0 Vol 0". Each time a button is pressed, "Key" value increases. However, once a button is pressed, it is no longer taken into account.
   "Vol" Value increases like "1, 2, 3 ..." if rotating VOLUME knob in the clockwise direction, or decreases like "0, 9, 8 ..." if rotating in the counterclockwise diretion.
8. To exit from this mode, press three buttons in the same procedure as step 1, or disconnect the power cord.

Note:
Press the ⏮◀◀/TUNING– button or ▶▶▷▷⏭/TUNING+ button for more than 1 second.

LED and Fluorescent Indicator Tube All Lit, Key Check Mode

Procedure :

1. When the power ON, press the I/⏻ button while pressing PLAY MODE/DIRECTION/TUNIG MODE button and □ button together.
2. Frame of the MD mark and the CD mark flash, and "BASS/TRE FLAT" appears for a moment.
3. When the VOLUME knob is turned clockwise, "VOLUME MAX" appears for a moment.
4. When the VOLUME knob is turned counterclockwise, "VOLUME MIN" appears for a moment.
5. Every pressing of the MUSIC MENU "R" button changes the display in the following order. "BASS/TRE MAX" → "BASS/TRE MIX" → "BASS/TRE FLAT"
6. Select the function "TAPE" using the FUNCTION button. Set the test tape AMS-110A or AMS-120.
7. Press PLAY MODE/DIRECTION/TUNIG MODE button to enter either "🔁" (loop) or "⇄" (two way).
8. Press the SYNCHRO REC button to start the AMS test.



9. Number of AMS signals is counted during the AMS test and the message "EDG#" (# means a number) appears. When the test tape either AMS-110A or AMS-120 is used, the AMS signal is detected twice before shut off.
10. When the AMS test ends, either "OK" or "NG" appears.
11. To exit the MC test mode, either press the I/⏻ button or perform the cold reset as described above.

Aging Mode

• Mode for repeating operations of the CD player and TC deck automatically.

When errors occur:

Aging stops and a message indicating that an error has occurred such as “CD MEC ERR” is displayed.
(For details of errors, refer to “Error History Display Mode”.)

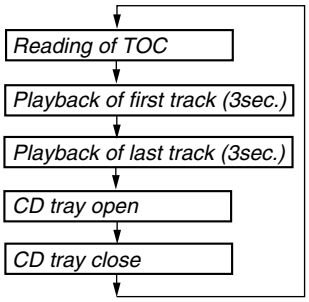
When no errors occur:

Aging is repeatedly performed.

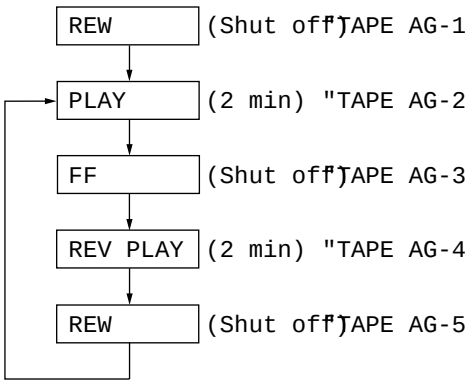
Procedure:

1. Load any CD and a tape.
2. Press the FUNCTION button and set the function to CD.
3. While pressing the PLAY MODE/DIRECTION/TUNING MODE button and ENTER/START button, press the I/⏻ button.
4. “AGING” is displayed on the fluorescent display tube briefly.
5. When the aging mode is set, the CD mark and MD mark on the fluorescent tube CD of player and TC deck momentarily start aging.
6. Operations are performed in the following sequence during aging.

CD :



Cassette :



7. To end aging, execute the cold reset.

Error History Display Mode

Mode for checking the history of errors which have occurred in the CD player.
Execute this mode after ending the aging mode.

Procedure:

1. Press the FUNCTION button, and set the function to “CD”.
2. While pressing the ☐ button and FUNCTION button, press the I/⏻ button.
3. “EMC@@EDC**” id displayed.
   @@ : Number of mechanism errors (Last 3 errors)
   ** : Number of errors (NO DISC ERROR) which occurred after chucking (Last 3 errors)
4. To check the history of mechanism errors, press the PLAY MODE/DIRECTION/TUNING MODE button, and to check BD errors, press the REPEAT/DOLBY NR/STEREO/MONO button, and switch the display.
5. To end, press the I/⏻ button and turn OFF the power.
6. To erase the error history, perform cold reset.
   (While pressing the PLAY MODE/DIRECTION/TUNING MODE button and ⏏ MD button, press the I/⏻ button.)

• Reading the Mechanism Error History Display

(To switch the history, press the PLAY MODE/DIRECTION/TUNING MODE button.)

Display

E@@M**#*$*

@@: Error number. 00 is the latest
*: Invalid
#: Load in operations related
- D: Operations stopped due to problems other than mechanism related during CLOSE
- E: Operations stopped due to problems other than mechanism related during OPEN
- C: Operations stopped due to problems other than mechanism related during chucking up

$: Load out operations related
- 1: Operations stopped during chucking up
- 2: Operations stopped during chucking down

• Reading the BD Error History Display

(To switch the history, press the REPEAT/DOLBY NR/STEREO/MONO button.)

Display

E@@D##SS%*

@@: Error number. 00 is the latest
##: Error details
- 01: Focus error
- 02: GFS error
- 03: Setup error

$$: Retry performed/not performed
- 00: Determined as NO DISC without chucking retry
- 02: Determined as NO DISC after chucking retry

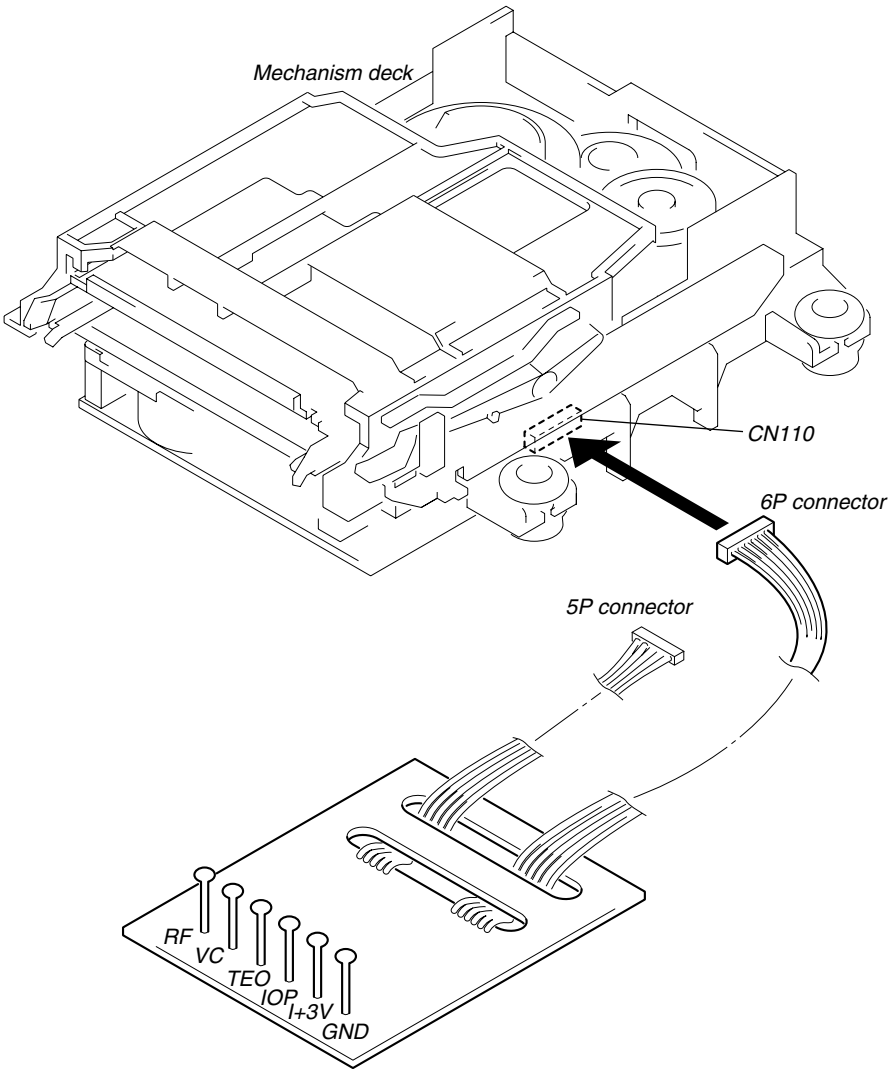
%: State when determined as NO DISC
- 1: When stopped
- 2: During setup
- 3: During TOC READ
- 4: During access
- 5: During playback
- 6: During PAUSE
- 7: During manual search (during playback)
- 8: During manual search (during Pause)

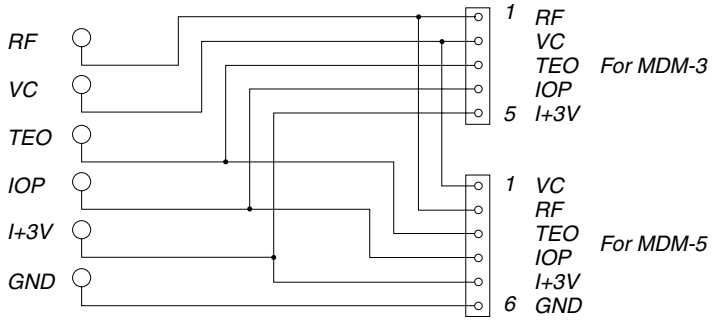
*: Invalid

JIG FOR CHECKING BD (MD) BOARD WAVEFORM

The special jig (J-2501-149-A) is useful for checking the waveform of the BD (MD) board. The names of terminals and the checking items to be performed are shown as follows.

GND : Ground
I+3V : For measuring IOP (Check the deterioration of the optical pick-up laser)
IOP : For measuring IOP (Check the deterioration of the optical pick-up laser)
TEO : TRK error signal (Traverse adjustment)
VC : Reference level for checking the signal
RF : RF signal (Check jitter)





IOP Data Recording and Display When optical Pick-up and Non-volatile Memory (IC171 of BD (MD)board) are Replaced

The IOP value labeled on the optical pick-up can be recorded in the non-volatile memory. By recording the value, it will eliminate the need to look at the value on the label of the optical pick-up. When replacing the optical pick-up or non-volatile memory (IC171 of BD (MD) board), record the IOP value on the optical pick-up according to the following procedure.

Record Precedure:

1. When the power ON, press the I/⏻ button while pressing the □ button and ● (TAPE) button together.
2. Press the ⏮◀◀/TUNING – button or ▶▶▷▷⏭/TUNING + button to display "[Service]", and press the ENTER/YES "R" button.
3. Press the ⏮◀◀/TUNING – button or ▶▶▷▷⏭/TUNING + button to display " lop Write", and press the ENTER/YES "R" button.
4. The display becomes "Ref=@@@.@" (@ is an arbitrary number) and the numbers which can be changed will blink.
5. Input the IOP value written on the optical pick-up.
   To select the number : Press the ⏮◀◀/TUNING – button or ▶▶▷▷⏭/TUNING + button.
   To select the digit : Press the SYNCHRO REC button and ENTER/START button at the sawe time. [Note 1])
   Note 1 :
   If a message "Can not SYNC!" or "NO TAPE" appears momentarily, press SYNCRO REC button several times until "CD-MD SYNC?" appears momentarily.
6. When the ENTER/YES "R" button is pressed, the display becomes "Measu=@@@.@" (@ is an arbitrary number).
7. As the adjustment results are recorded for the 6 value. Leave it as it is and press the ENTER/YES "R" button.
8. "Complete!" will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become "Iop Write".
9. Press the REPEAT/DOLBY NR/STEREO/MONO button to exit.

Display Precedure:

1. When the power ON, press the I/⏻ button while pressing the □ button and ● (TAPE) button together.
2. Press the ⏮◀◀/TUNING – button or ▶▶▷▷⏭/TUNING + button to display "[Service]", and press the ENTER/YES "R" button.
3. Press the ⏮◀◀/TUNING – button or ▶▶▷▷⏭/TUNING + button to display "lop Read", and press the ENTER/YES "R" button.
   @@.@ : indicates the Iop value labeled on the pick-up.
   ##.# : indicates the Iop value after adjustment
5. To end, press MENU/NO "R" button to display "Iop Read". Then press the REPEAT/DOLBY NR/STEREO/MONO button to display "Standby".

Checks Prior to Parts Replacement and Adjustments

Before performing repairs, perform the following checks to determine the faulty locations up to a certain extent.
Details of the procedures are described in "5 Electrical Adjustments".

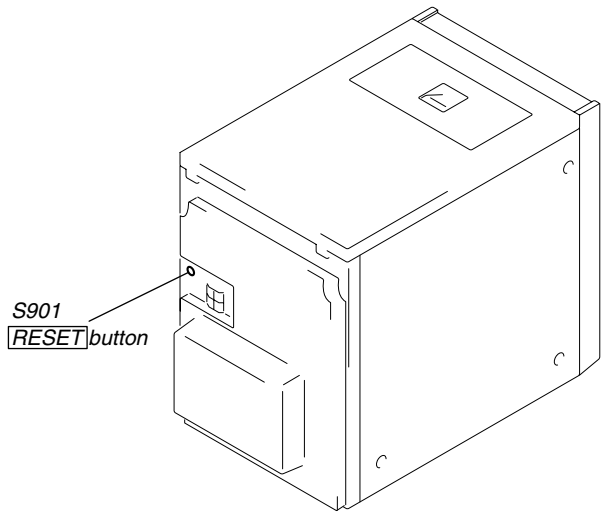
	Criteria for Determination (Unsatisfactory if specified value is not satisfied)	**Measure if unsatisfactory:**
Laser power check (5-6-2 : See page 36)	• 0.9 mW power Specified value : 0.84 to 0.92 mW • 7.0 mW power Specified value : 6.8 to 7.2 mW	• Clean the optical pick-up • Adjust again • Replace the optical pick-up
	Iop (at 7mW) • Labeled on the optical pickup Iop value ± 10mA	• Replace the optical pick-up
Traverse check (5-6-3 : See page 37)	• Traverse waveform Specified value : Below 10% offset	• Replace the optical pick-up
Focus bias check (5-6-4 : See page 38)	• Error rate check Specified value : For points a, b, and c C1 error : 220 or less AD error : 2 or less	• Replace the optical pick-up
C PLAY check (5-6-5 : See page 38)	• Error rate check Specified value: a. When using test disc (MDW-74/AU-1) C1 error : Below 80 AD error : Below 2 b. When using check disc (TDYS-1) C1 error : 50 or less	• Replace the optical pick-up
Self-recording/playback check (REC/PLAY) (5-6-6 : See page 38)	• C PLAY error rate check Specified value: C1 error : 80 or less AD error : 2 or less	If always unsatisfactory: • Replace the overwrite head • Check for disconnection of the circuits around the overwrite head
		If occasionally unsatisfactory: • Check if the overwrite head is distorted
TEMP check (Temperature compensation offset check) (5-6-1 : See page 36)	• Unsatisfactory if displayed as T=@@ (##) [NG]" NG (@@, ## are both arbitrary numbers)	• Check the mechanism around the sled • Check for disconnection of the circuits around D101 (BD board) • Check the signals around IC101, IC121, CN102, CN103 (BD board)

Note:
The criteria for determination above is intended merely to determine if satisfactory or not, and does not serve as the specified value for adjustments.
When performing adjustments, use the specified values for adjustments.

Forced Reset

The system microprocessor can be reset in the following procedure.
Use these procedure when the unit cannot be operated normally due to hung-up of the microprocessor, etc.
Use of the RESET switch is recommended when the machine cannot exit the REtry CASE DISPLAY mode or a machine does not operate correctly after re-assembling.
Procedure :
Press the S901 (RESET button of the back panel) on the MAIN board.

[MAIN BOARD] (Component Side)



Retry Cause Display Mode

- In this test mode, the causes for retry of the unit during recording can be displayed on the fluorescent indicator tube. During playback, the "track mode" for obtaining track information will be set.
  This is useful for locating the faulty part of the unit.
- The following will be displayed :
  During recording and stop : Retry cause, number of retries, and number of retry errors.
  During playback : Information such as type of disc played, part played, copyright.
  These are displayed in hexadecimal.

Precedure:

1. Load a recordable disc whose contents can be erased, into the unit.
2. Press the [MENU/NO "R"] button. When "Edit/Menu" is displayed on the fluorescent indicator tube, press the [⏮◀◀/TUNING –] button or [▶▶⏭/TUNING +] button to display "All Erase?".
3. Press the [ENTER/YES "R"] button.
4. "All Erase??" is displayed on the fluorescent indicator tube.
5. Press the [ENTER/YES "R"] button to display "Complete!!", and press the [□] button immediately. Wait for about 10 seconds while pressing the button.
6. When the "TOC" displayed on the fluorescent display tube goes off, release the [□] button.
7. Press the [● MD] button to enter recording standby. Then press the [MD ▷II] button and start recording. In about 2 seconds, the record mode retry cause is displayed. (Fig.1) If recording cannot be performed, press the [FUNCTION] button and set a different section.
8. To check the "track mode", stop recording by pressing [□] button and press the [MD ▷II] button to start play and the track information in the play mode appears.
9. To exit the test mode, press the [I/⏻] button, and turn OFF the power. When "STNDBY" disappears, disconnect the power plug from the outlet. If the test mode cannot be exited, refer to "Forced Reset"on page 15.

Fig. 1 Reading the Test Mode Display (During recording and stop)

[RTs@@c##c**]
Fluorescent display tube display

@@ : Cause of retry
: Number of retries
** : Number of retry errors

Fig. 2 Reading the Test Mode Display (During playback)

[@@####**$$]
Fluorescent display tube display

@@ : Parts No. (name of area named on TOC)
: Cluster
** : Sector
} Address (Physical address on disc)
$$: Track mode (Track information such as copyright information of each part)

Reading the Retry Cause Display

	Higher Bits				Lower Bits				Hexa-decimal	Cause of Retry	Occurring conditions
Hexadecimal	8	4	2	1	8	4	2	1			
Bit	b7	b6	b5	b4	b3	b2	b1	b0			
Binary	0	0	0	0	0	0	0	1	01	shock	When ADER was counted more than five times continuously
	0	0	0	0	0	0	1	0	02	ader5	When ADER was counted more than five times continuously
	0	0	0	0	0	1	0	0	04	Discontinuous address	When ADIP address is not continuous
	0	0	0	0	1	0	0	0	08	DIN unlock	When DIN unlock is detected
	0	0	0	1	0	0	0	0	10	FCS incorrect	When not in focus
	0	0	1	0	0	0	0	0	20	IVR rec error	When ABCD signal level exceeds the specified range
	0	1	0	0	0	0	0	0	40	CLV unlock	When CLV is unlocked
	1	0	0	0	0	0	0	0	80	Access fault	When access operation is not performed normally

Reading the Display:
Convert the hexadecimal display into binary display. If more than two causes, they will be added.

Example

When 42 is displayed:
Higher bit : 4 = 0100 ⟶ b6
Lower bit : 2 = 0010 ⟶ b1
In this case, the retry cause is combined of "CLV unlock" and "ader5".

When A2 is displayed:
Higher bit : A = 1010 ⟶ b7+b5
Lower bit : 2 = 0010 ⟶ b2
The retry cause in this case is combined of "access fault", "IVR rec error", and "ader5".

Reading the Track Mode Display

	Higher Bits				Lower Bits				Hexa-decimal	Details	
Hexadecimal	8	4	2	1	8	4	2	1			
Bit	b7	b6	b5	b4	b3	b2	b1	b0		When 0	When 1
Binary	0	0	0	0	0	0	0	1	01	Emphasis OFF	Emphasis ON
	0	0	0	0	0	0	1	0	02	Monaural	Stereo
	0	0	0	0	0	1	0	0	04	This is 2-bit display. Normally 01.	
	0	0	0	0	1	0	0	0	08	01:Normal audio. Others:Invalid	
	0	0	0	1	0	0	0	0	10	Audio (Normal)	Invalid
	0	0	1	0	0	0	0	0	20	Original	Digital copy
	0	1	0	0	0	0	0	0	40	Copyright	No copyright
	1	0	0	0	0	0	0	0	80	Write prohibited	Write enable

Reading the Display:
Convert the hexadecimal display into binary display. If more than two causes, they will be added.

Example When 84 is displayed:
Higher bit : 8 = 1000 ⟶ b7
Lower bit : 4 = 0100 ⟶ b2
In this case, as b2 and b7 are 1 and others are 0, it can be determined that the retry cause is combined of “emphasis OFF”, “monaural”, “original”, “copyright exists”, and “write enabled”.

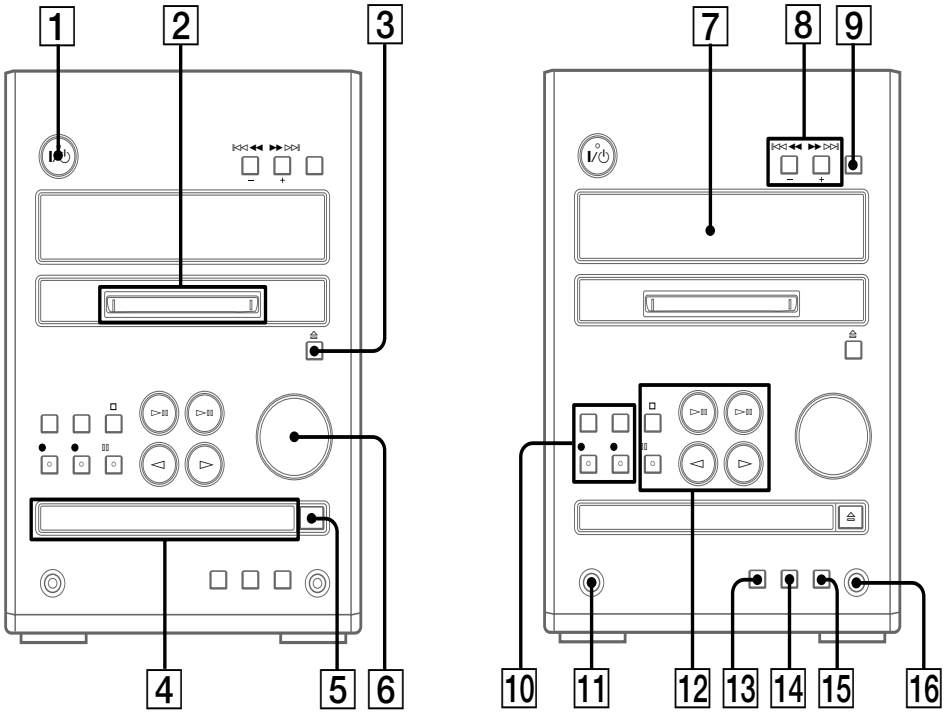
Example When 07 is displayed:
Higher bit : 0 = 1000 ⟶ All 0
Lower bit : 7 = 0111 ⟶ b0+b1+b2
In this case, as b0, b1, and b2 are 1 and others are 0, it can be determined that the retry cause is combined of “emphasis ON”, “stereo”, “original”, “copyright exists”, and “write prohibited”.

Hexadecimal ⟶ Binary Conversion Table

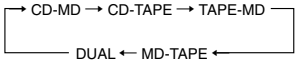
Hexadecimal	Binary	Hexadecimal	Binary
0	0000	8	1000
1	0001	9	1001
2	0010	A	1010
3	0011	B	1011
4	0100	C	1100
5	0101	D	1101
6	0110	E	1110
7	0111	F	1111

SECTION 2
GENERAL

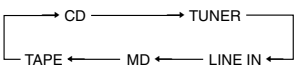
Identifying the Parts
Front Panel



1 I/⏻ Power switch
2 MD slot
3 MD ⏏ (eject) button
4 Disk tray
5 CD ⏏ (eject) button
6 VOLUME knob
7 Display
8 ⏮◀◀/▶▶⏭ button
9 TUNER/BAND button
10 Recording button
SYNCHRO REC button



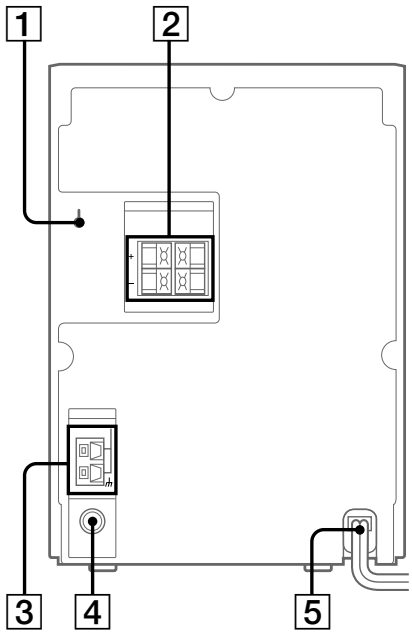
ENTER/START button
● MD button
● TAPE button
11 PHONES jack
12 CD/MD/TAPE play button
□ STOP button
CD ⏸/▷ play/pause button
MD ⏸/▷ play/pause button
⏸ TAPE pause button
TAPE ◁/▷ play button
13 PLAY MODE button
DIRECTION button
TUNING MODE button
14 REPEAT button
DOLBY NR button
STEREO/MONO button
15 FUNCTION button



16 LINE IN jack

This section is extracted from instruction manual.

Rear Panel



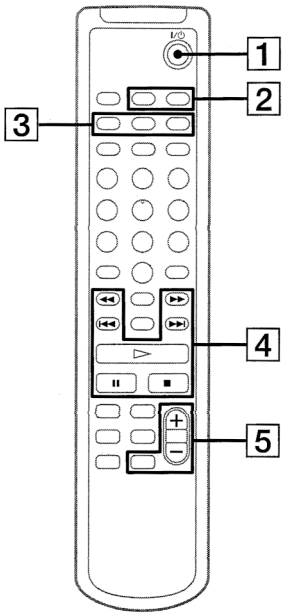
1 Reset switch
2 Speaker terminal
3 AM antenna termianal
4 FM antenna terminal
5 Power cord

Parts descriptions for the remote

You can use the supplied remote to control the system.

Note

You cannot perform the following operations with the remote;
— TUNING MODE setting for the tuner
— STEREO/MONO setting for the tuner
— Removing discs
— Recording on the MD or the tape
— One Touch Play



1 I/⏻ (power) switch

2 CLOCK/TIMER SELECT button

Press to check timer settings, or to set the timer on/off.

CLOCK/TIMER SET button

Press to set the clock and timer functions.

Parts descriptions for the remote (continued)

3 PLAY MODE button

Press to select normal play, Shuffle Play or Programme Play.

REPEAT button

Press to play a track or all the tracks repeatedly

MUSIC MENU button

Press to select the type of the preset equalizer.

4 CURSOR←/→, ◀◀/▶▶ buttons

Press to label a CD, MD and preset station, or to set the clock.

I◀◀/▶▶I (AMS: Automatic Music Sensor) buttons

▷ (play) button

II (pause) button

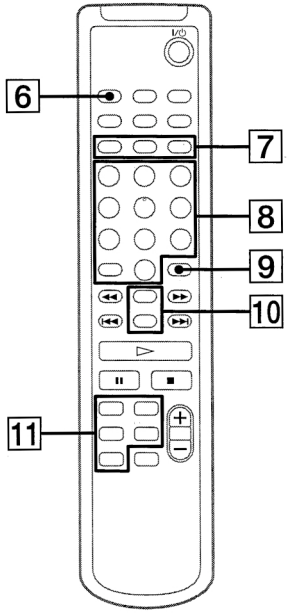
■ (stop) button

5 VOLUME +/– buttons

Press to adjust the volume.

DBFB button

Press to reinforce the bass sound.



6 SLEEP button

Press to set Sleep Timer.

7 MENU/NO button

Press to set Programme Play, or to label a CD, MD and preset station.

NAME EDIT/CHARACTER button

Press to display the text input screen and to select the type of characters to be input.

ENTER/YES button

Press to set the clock, Programme Play and to label a CD, MD and preset station, or to enter the settings in "Edit Menu" or "Setup Menu".

8 Number buttons

Press to select track numbers of a CD, MD, or preset station.

9 CLEAR button

Press to cancel the selection.

10 SCROLL button

Press to display the disc title or track title scrolling.

DISPLAY button

Press to show the various information.

11 The sound source buttons

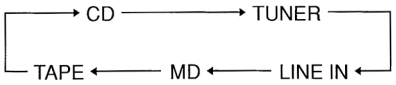
MD button

CD button

FUNCTION button

Press to switch the sound source.

Each time you press this button, the sound source changes as follows;



BAND, TUNER button

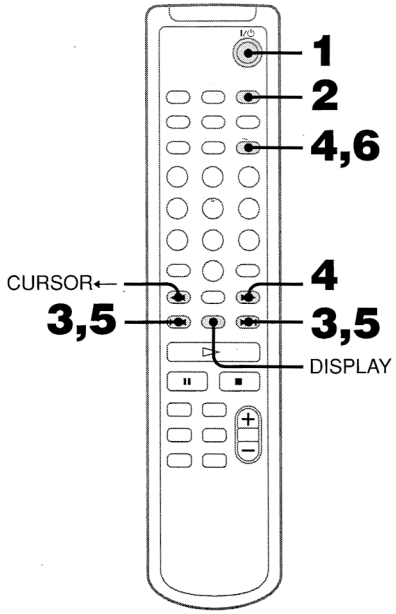
Press to select the tuner for the sound source, or to select the FM or AM band.

TAPE button

Step 2: Setting the time

You must set the time beforehand to use the timer functions.

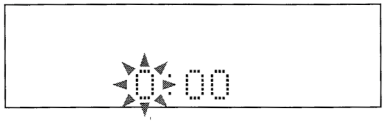
The clock is on a 24-hour system for the European model, and a 12-hour system for other models. The 24-hour system is used for illustration purposes.



1 Turn on the system.

2 Press CLOCK/TIMER SET.

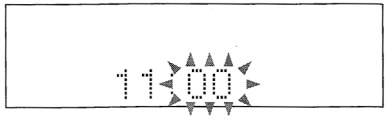
The clock appears and the hour indication flashes.



3 Press I◀◀ or ▶▶I to set the hour.

4 Press ENTER/YES or CURSOR→.

The minute indication flashes.



5 Press I◀◀ or ▶▶I to set the minute.

6 Press ENTER/YES.

The clock starts.

If you made a mistake

Press CURSOR← or → repeatedly until the incorrect item flashes, then set it again.

To change the preset time

You can change the preset time while the system is off.

1 Press DISPLAY to display the clock.

2 Press CLOCK/TIMER SET.

3 Repeat steps 3 to 6 of "Setting the time".

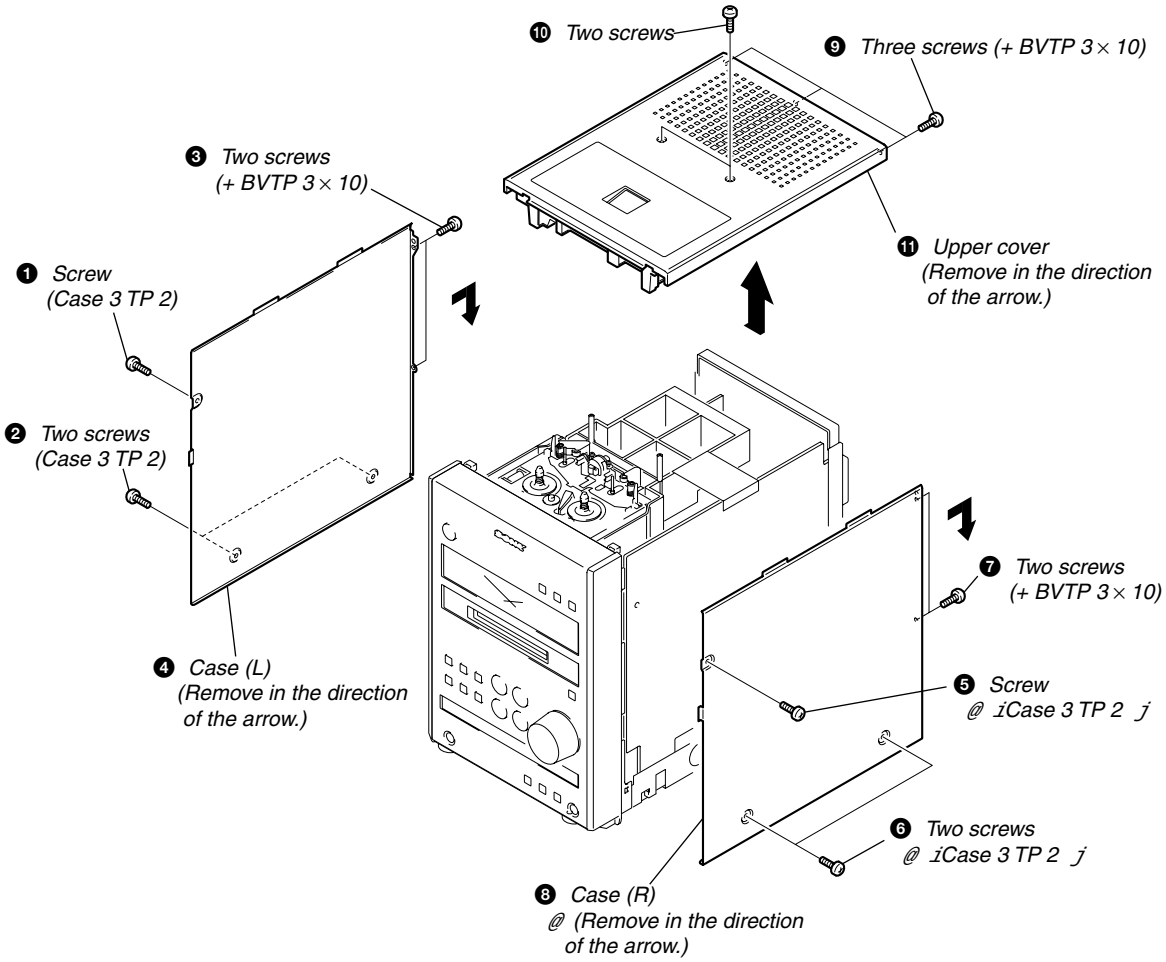
Tip

The upper dot of the colon flashes for the first 30 seconds, and the lower dot flashes for the last 30 seconds of each minute.

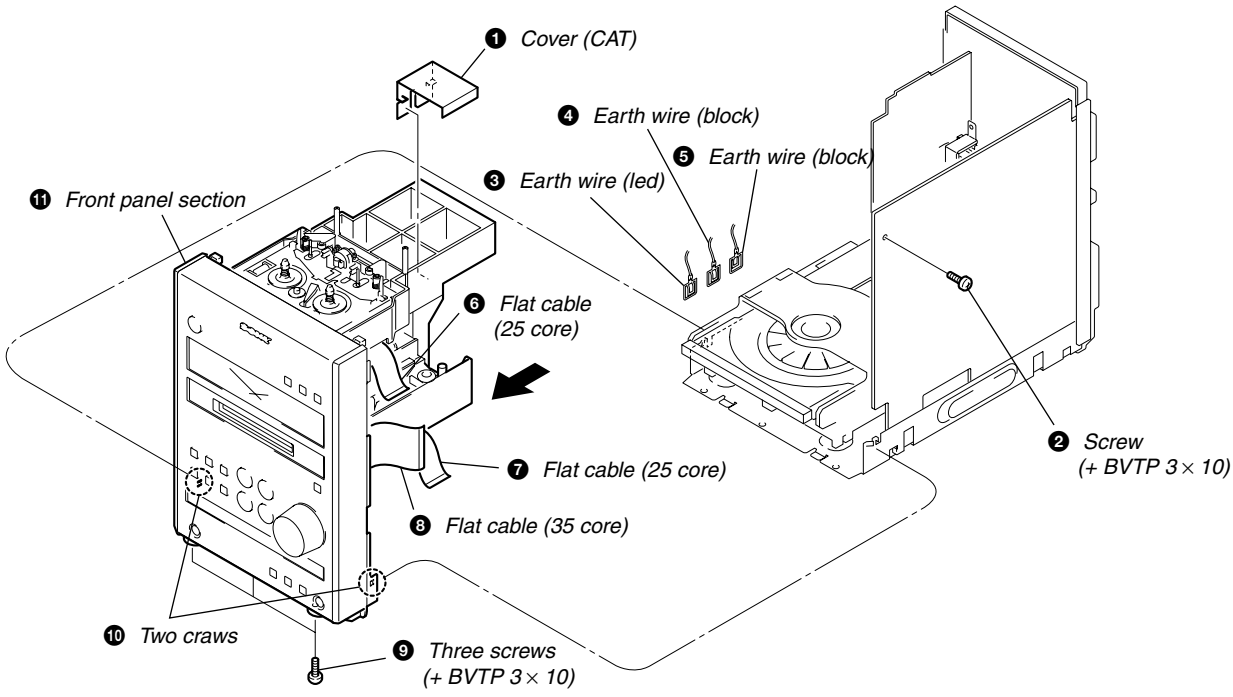
SECTION 3
DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

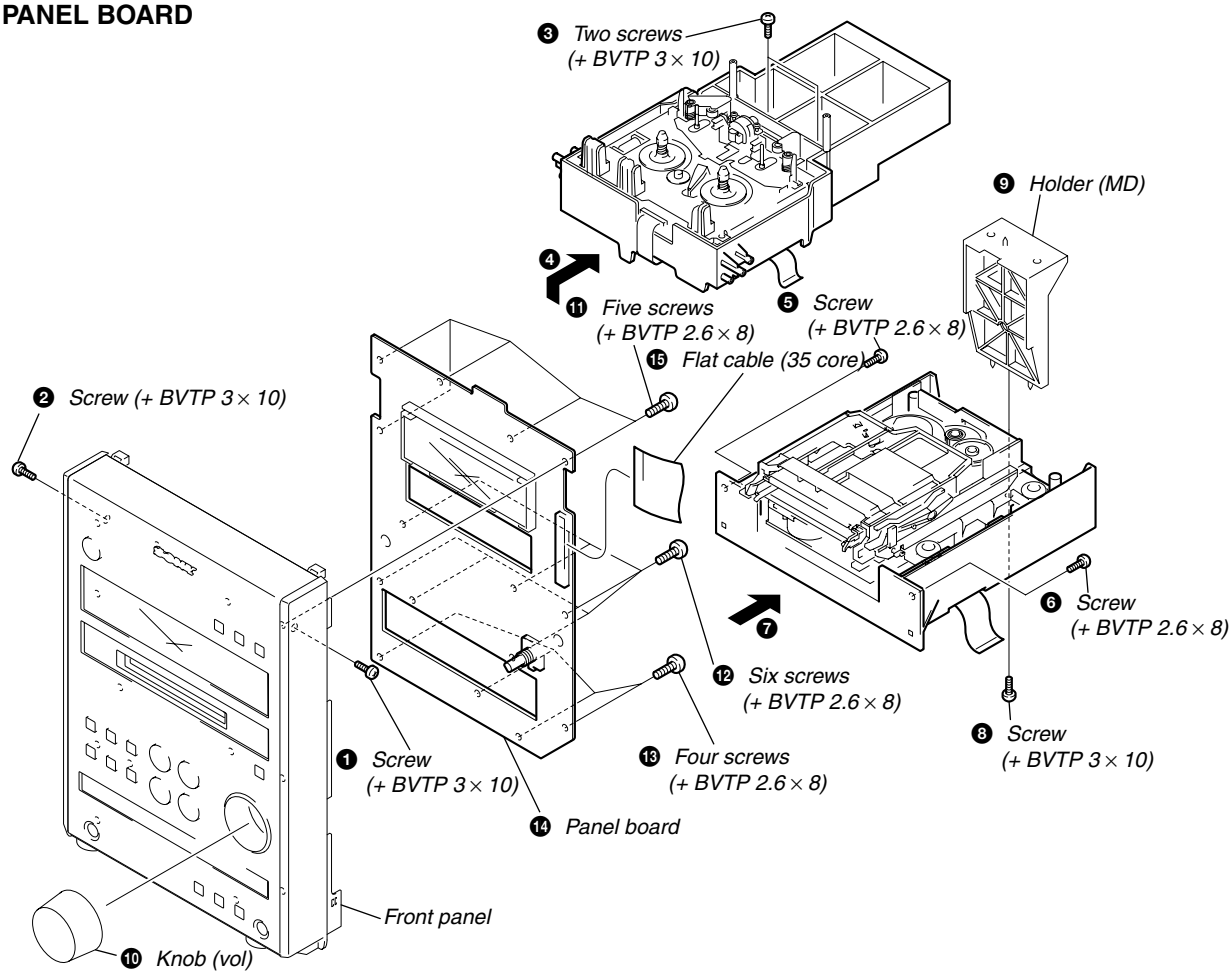
3-1. UPPER COVER



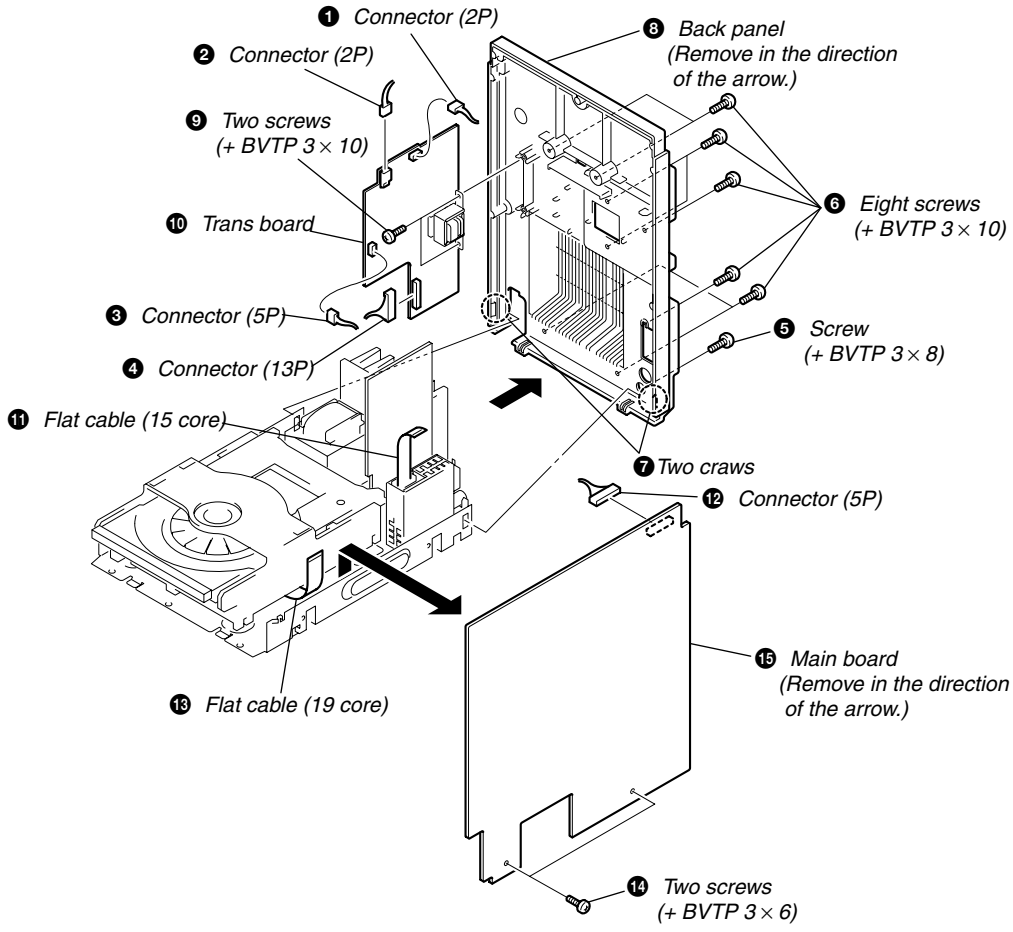
3-2. FRONT PANEL SECTION



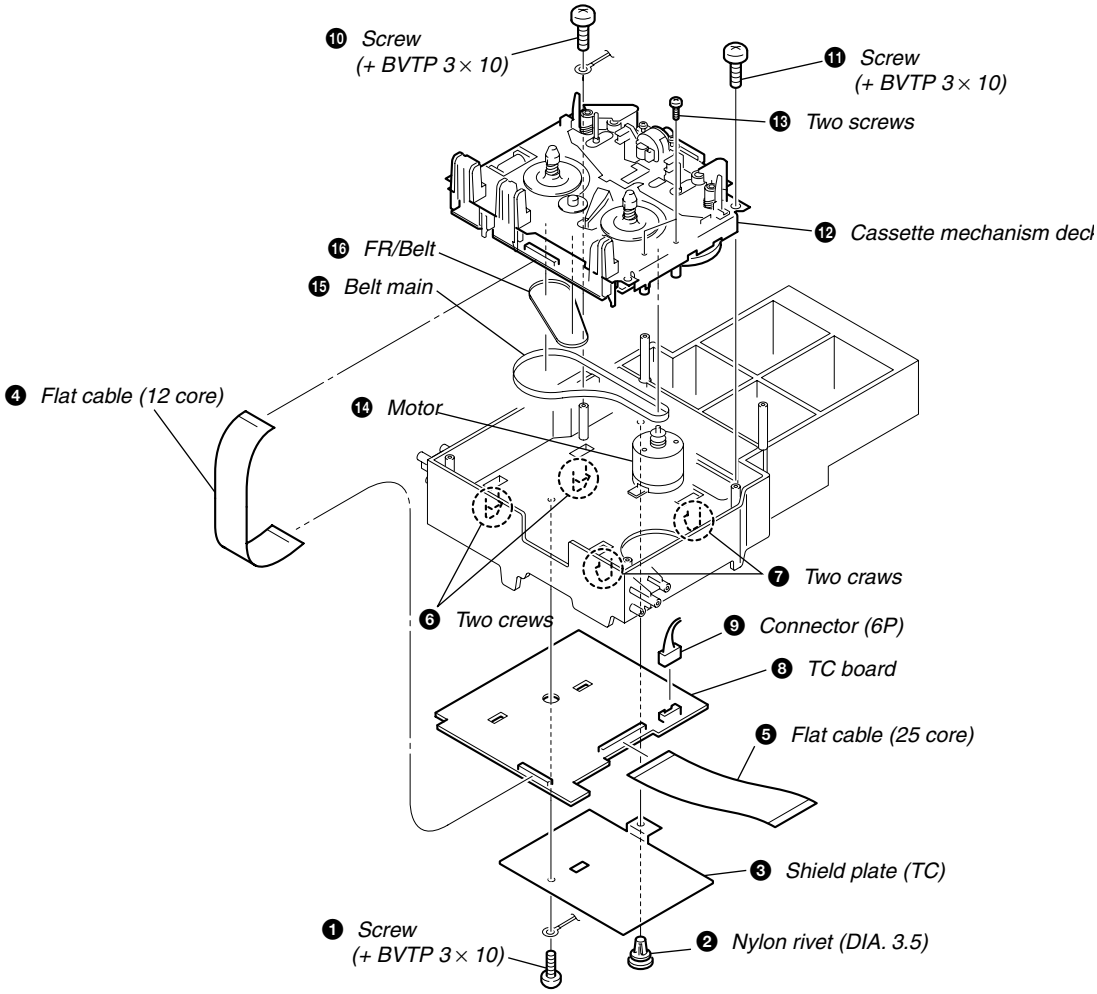
3-3. PANEL BOARD


❸ Two screws (+ BVTP 3× 10)
❾ Holder (MD)
❹
⓫ Five screws (+ BVTP 2.6× 8)
❺ Screw (+ BVTP 2.6× 8)
⓯ Flat cable (35 core)
❷ Screw (+ BVTP 3× 10)
❻ Screw (+ BVTP 2.6× 8)
❼
⓬ Six screws (+ BVTP 2.6× 8)
❽ Screw (+ BVTP 3× 10)
❶ Screw (+ BVTP 3× 10)
⓭ Four screws (+ BVTP 2.6× 8)
⓮ Panel board
Front panel
❿ Knob (vol)

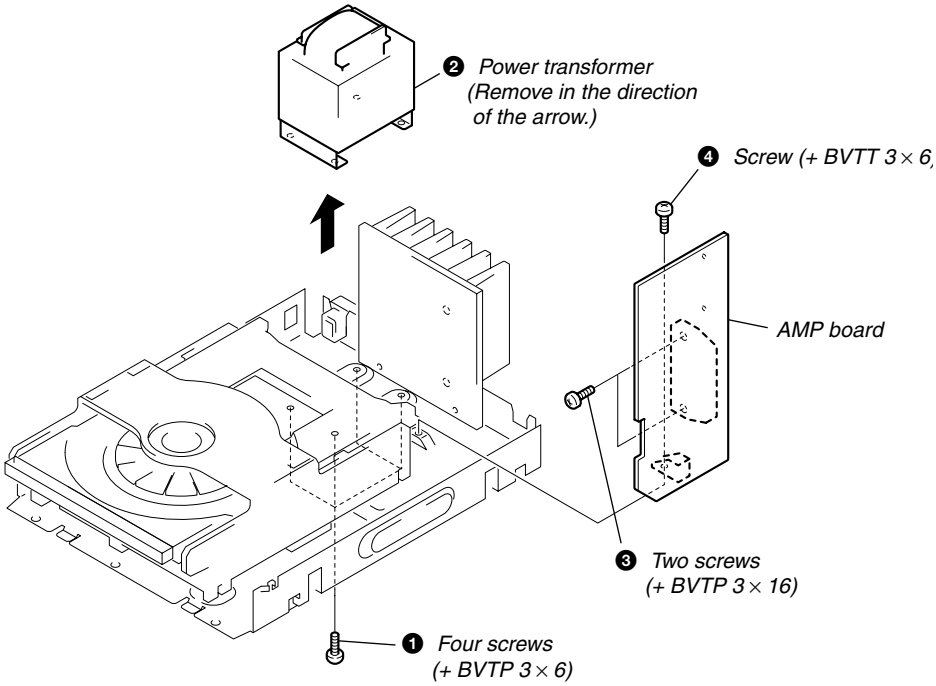
3-4. MAIN BOARD


❶ Connector (2P)
❽ Back panel (Remove in the direction of the arrow.)
❷ Connector (2P)
❾ Two screws (+ BVTP 3× 10)
❻ Eight screws (+ BVTP 3× 10)
❿ Trans board
❸ Connector (5P)
❺ Screw (+ BVTP 3× 8)
❹ Connector (13P)
⓫ Flat cable (15 core)
❼ Two craws
⓬ Connector (5P)
⓯ Main board (Remove in the direction of the arrow.)
⓭ Flat cable (19 core)
⓮ Two screws (+ BVTP 3× 6)

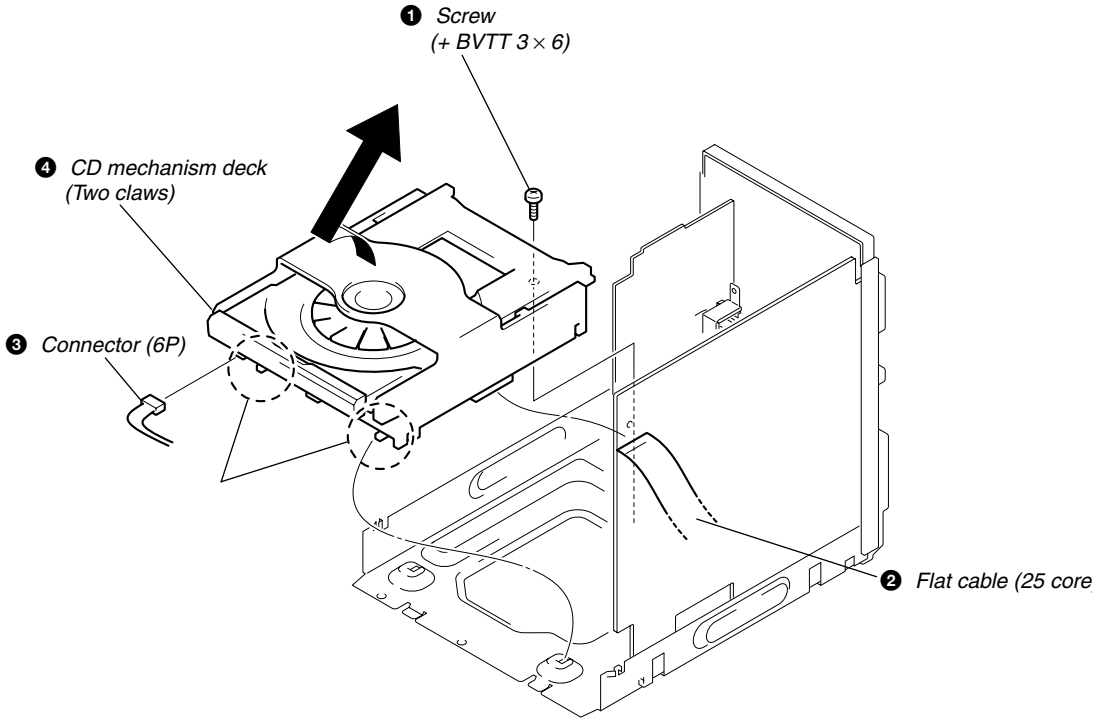
3-5. CASSETTE MACHANISM



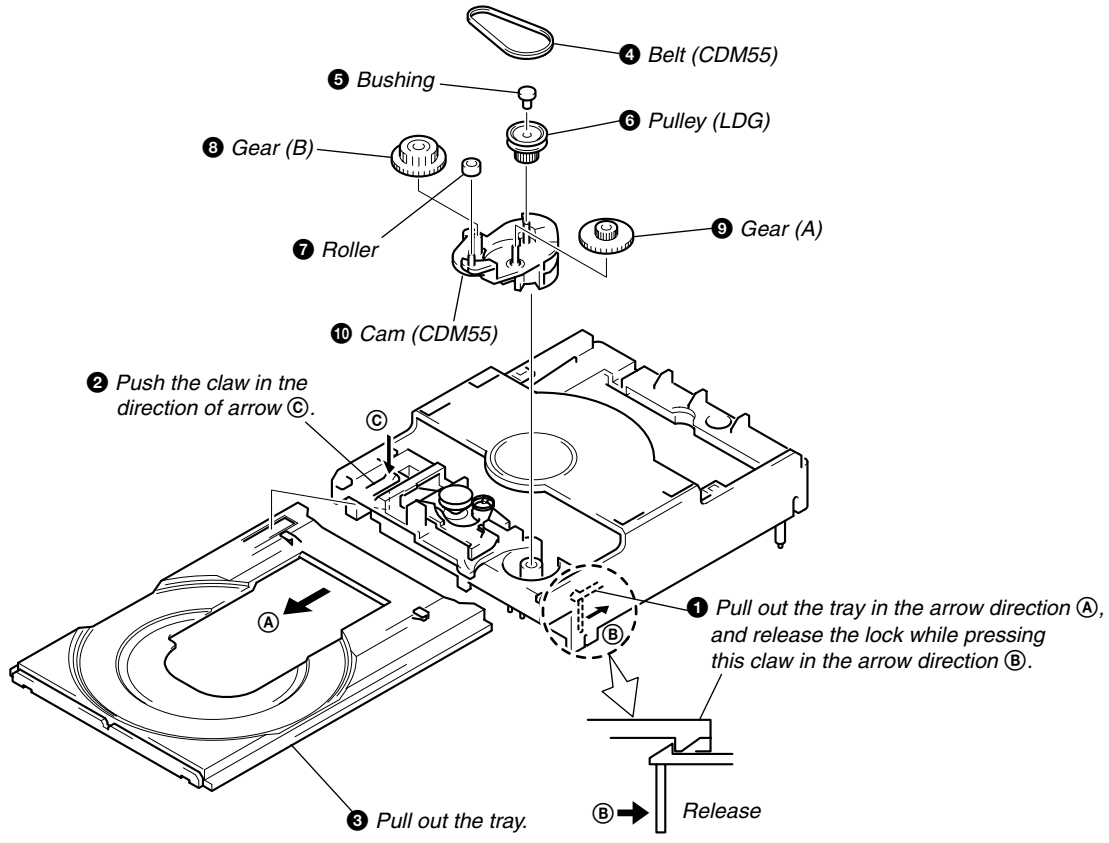
3-6. POWER TRANSFORMER/AMP BOARD



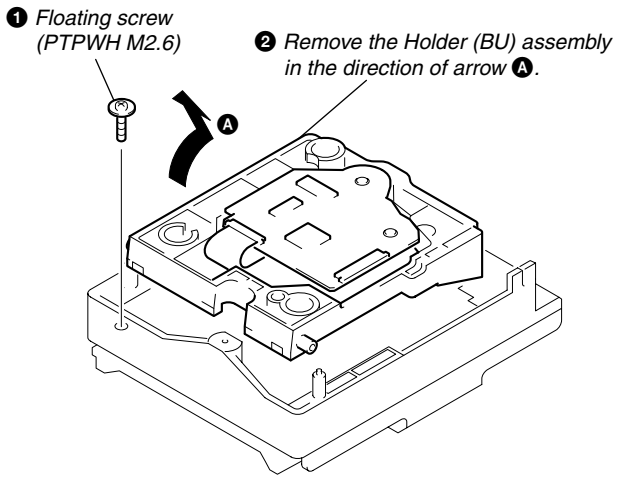
3-7. CD MECHANISM DECK



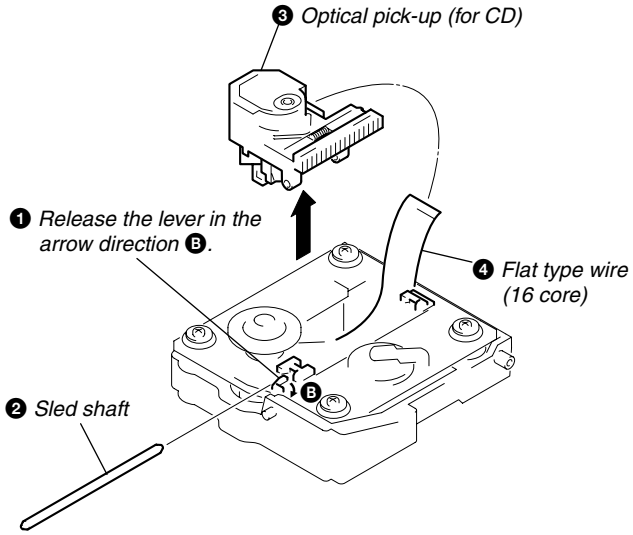
3-8. TRAY, GEAR AND CAM



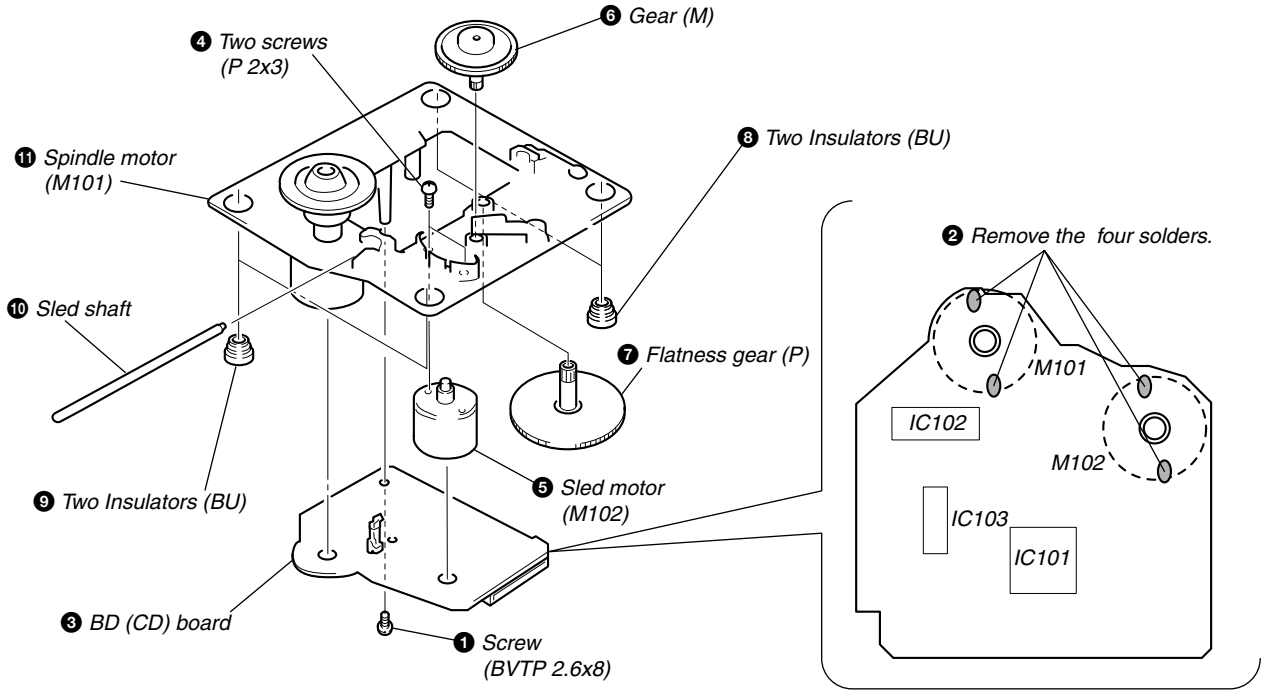
3-9. CD BASE UNIT



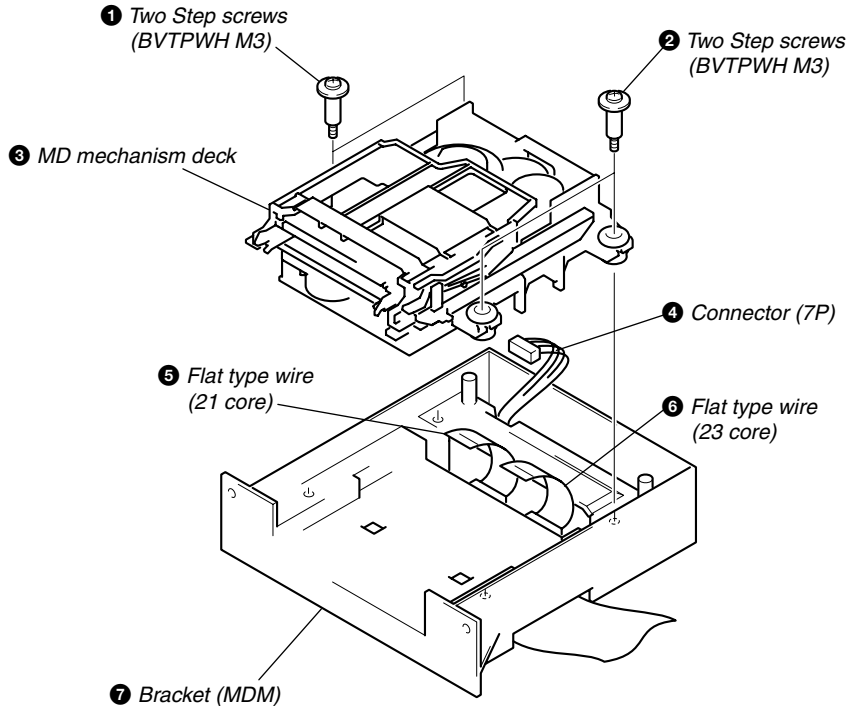
3-10. OPTICAL PICK-UP SECTION OF CD (KSS-213BA/F-NP)



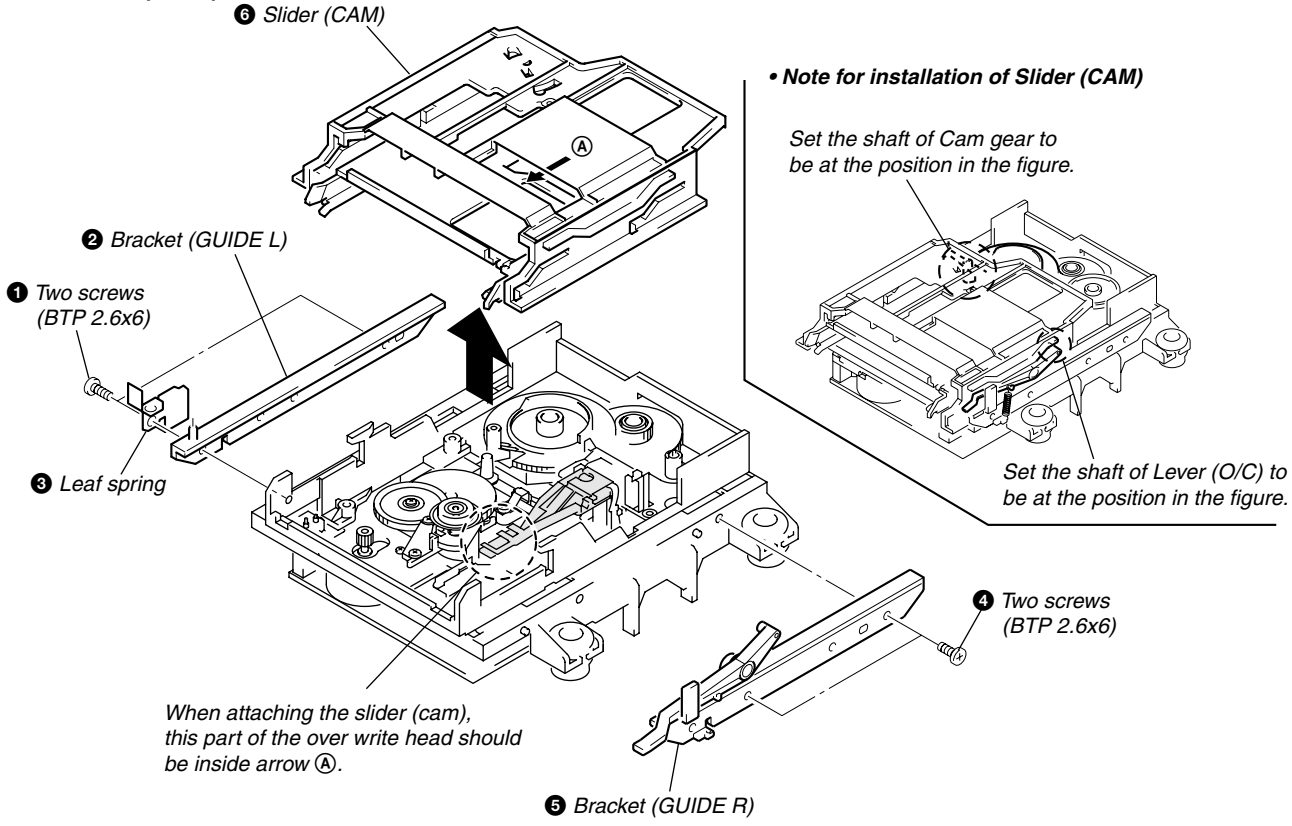
3-11. BD (CD) BOARD, SPINDLE MOTOR (M101) AND SLED MOTOR (M102)



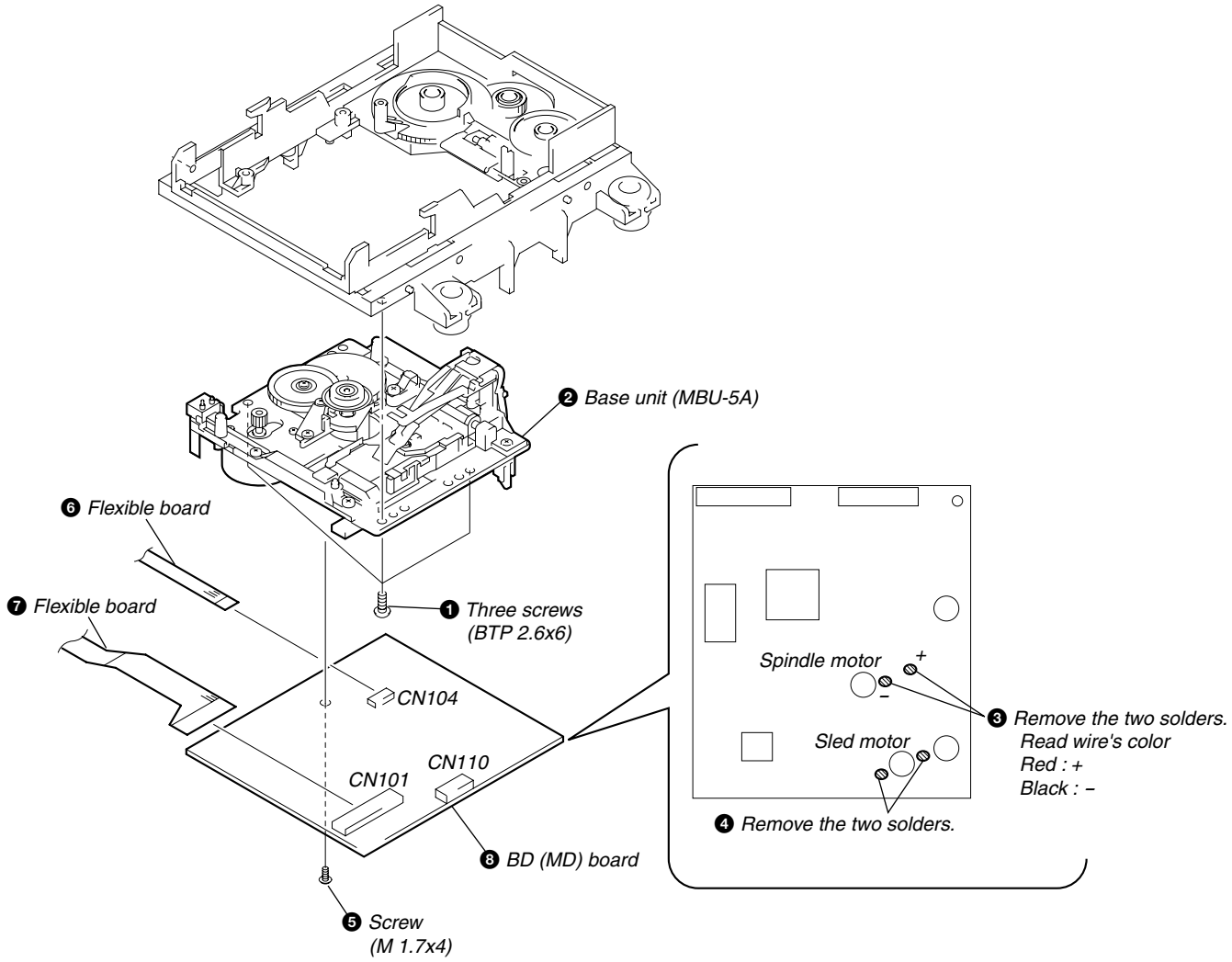
3-12. MD MECHANISM DECK


❶ Two Step screws (BVTPWH M3)
❷ Two Step screws (BVTPWH M3)
❸ MD mechanism deck
❹ Connector (7P)
❺ Flat type wire (21 core)
❻ Flat type wire (23 core)
❼ Bracket (MDM)

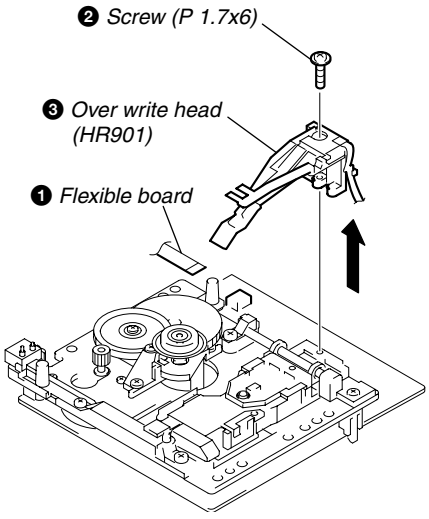
3-13. SLIDER (CAM)


❻ Slider (CAM)
• Note for installation of Slider (CAM)
Set the shaft of Cam gear to be at the position in the figure.
❷ Bracket (GUIDE L)
❶ Two screws (BTP 2.6x6)
❸ Leaf spring
Set the shaft of Lever (O/C) to be at the position in the figure.
❹ Two screws (BTP 2.6x6)
When attaching the slider (cam), this part of the over write head should be inside arrow Ⓐ.
❺ Bracket (GUIDE R)

3-14. BASE UNIT (MBU-5A) and BD (MD) BOARD

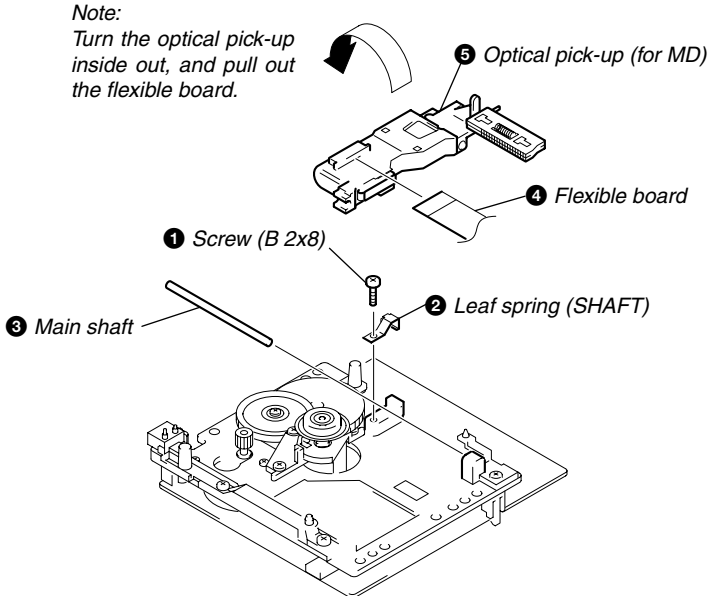


3-15. OVER WRITE HEAD

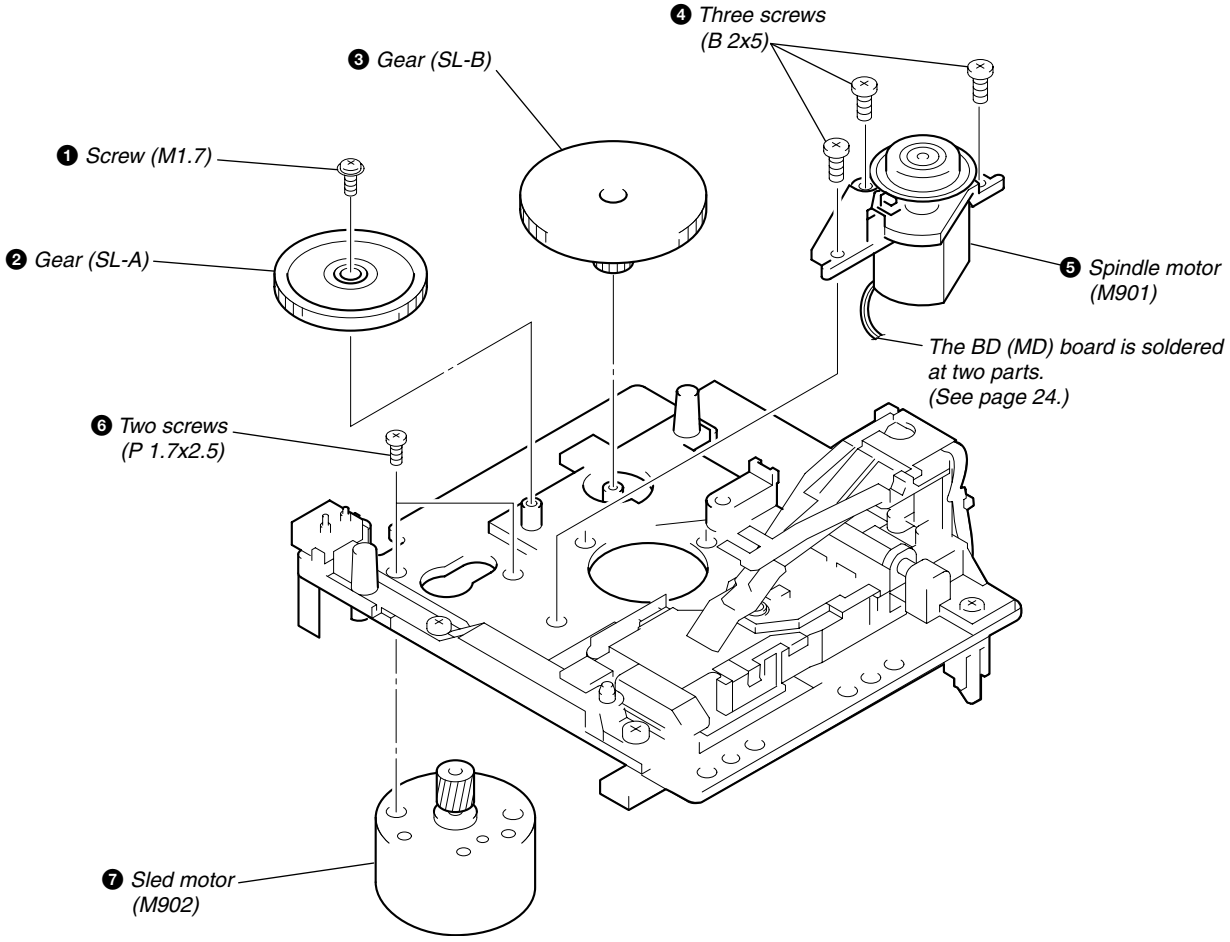


3-16. OPTICAL PICK-UP OF MD (KMS-260B/J1N)

Note:
Turn the optical pick-up inside out, and pull out the flexible board.



3-17. SPINDLE MOTOR (M901) and SLED MOTOR (M902) (MD)



SECTION 4
TEST MODE

Note 1: About "R"
As this unit has only a few buttons, some operations require the use of remote commander (RM-SJ373/provided with unit: 1-418-554-11) buttons. These operations are indicated as "R" in this manual.
Example: MENU/NO "R" ...Press the MENU/NO button of the remote commander.

4-1. PRECAUTIONS FOR USE OF TEST MODE

- As loading related operations will be performed regardless of the test mode operations being performed, be sure to check that the disc is stopped before setting and removing it.
  Even if the ⏏ (MD) button is pressed while the disc is rotating during continuous playback, continuous recording, etc., the disc will not stop rotating.
  Therefore, it will be ejected while rotating.
  Be sure to press the ⏏ (MD) button after pressing the MENU/NO "R" button and the rotation of disc is stopped.

4-1-1. Recording laser emission mode and operating buttons

- Continuous recording mode (CREC MODE)
- Laser power check mode (LDPWR CHECK)
- Laser power adjustment mode (LDPWR ADJUST)
- Traverse (MO) check (EF MO CHECK)
- Traverse (MO) adjustment (EF MO ADJUST)
- When pressing the ●MD button.

4-2. SETTING THE TEST MODE

The following are two methods of entering the test mode.

Procedure 1: Press the FUNCTION button, and set the function to "MD" before hand. When the power ON, press the I/⏻ button while pressing the ☐ button and ● TAPE button together.
When the test mode is set, "[Check]" will be displayed. Pressing the ⏮◀◀/TUNING – button or ▶▶⏭/TUNING + button switches between the following four groups; ⋯ ⟷ Check ⟷ Adjust ⟷ Service ⟷ Develop ⟷ ⋯:

Procedure 2: Press the FUNCTION button, and set the function to "MD" before hand. When the power ON, press the I/⏻ button while pressing the ☐ button and ▯▯TAPE button together.
When the test mode is set, "TEMP CHECK" will be displayed. By setting the test mode using this procedure, only the "Check" group of procedure 1 can be executed.

4-3. EXITING THE TEST MODE

Press the REPEAT/DOLBY NR/STEREO/MONO button.

4-4. BASIC OPERATIONS OF THE TEST MODE

All operations are performed using the ⏮◀◀/TUNING – button or ▶▶⏭/TUNING + button, ENTER/YES "R" button, and MENU/NO "R" button.
The functions of these buttons are as follows.

Function name	Function
⏮◀◀/TUNING – button or ▶▶⏭/TUNING + button	Changes parameters and modes
ENTER/YES "R" button	Proceeds onto the next step. Finalizes input.
MENU/NO "R" button	Returns to previous step. Stops operations.

4-5. SELECTING THE TEST MODE

There are 31 types of test modes as shown below. The groups can be switched by pressing the [⏮◀◀/TUNING –] button or [▶▶⏭/TUNING +] button. After selecting the group to be used, press the [ENTER/YES "R"] button. After setting a certain group, pressing the [⏮◀◀/TUNING –] button or [▶▶⏭/TUNING +] button switches between these modes.
Refer to "Group" in the table for details selected.
All items used for servicing can be treated using group S. So be carefully not to enter other groups by mistake.

Display	Contents	Mark	Group (∗)
TEMP CHECK	Temperature compensation offset check		C S
LDPWR CHECK	Laser power check		C S
EF MO CHECK	Traverse (MO) check		C S
EF CD CHECK	Traverse (CD) check		C S
FBIAS CHECK	Focus bias check		C S
S curve CHECK	S letter check	(X)	C
VERIFY MODE	Non-volatile memory check	(X)	C
DETRK CHECK	Detrack check	(X)	C
TEMP ADJUST	Temperature compensation offset adjustment		A S
LDPWR ADJUST	Laser power adjustment		A S
EF MO ADJUST	Traverse (MO) adjustment		A S
EF CD ADJUST	Traverse (CD) adjustment		A S
FBIAS ADJUST	Focus bias adjustment		A S
EEP MODE	Non-volatile memory control	(X) (!)	D
MANUAL CMD	Command transmission	(X)	D
SVDATA READ	Status display	(X)	D
ERR DP MODE	Error history display, clear		S
SLED MOVE	Sled check	(X)	D
ACCESS MODE	Access check	(X)	D
0920 CHECK	Outermost circumference check	(X)	D
HEAD ADJUST	Head position check	(X)	D
CPLAY2 MODE	Same functions as CPLAY MODE	(X)	D
CREC2 MODE	Same functions as CREC MODE	(X)	D
ADJ CLEAR	Initialization of non-volatile memory of adjustment value		A S
AG Set (MO)	Auto gain output level adjustment (MO)		A S
AG Set (CD)	Auto gain output level adjustment (CD)		A S
Iop Read	IOP data display		C S
Iop Write	IOP data write		A S
INFORMATION	Microprocessing version display		C S
CPLAY MODE	Continuous play mode		C A S D
CREC MODE	Continuous recording mode		C A S D

Group (∗)
C: Check A: Adjust
S: Service D: Develop

- For details of each adjustment mode, refer to "5. Electrical Adjustments".
  For details of "ERR DP MODE", refer to "Self-Diagnosis Function" on page 2.
- If a different mode has been selected by mistake, press the [MENU/NO "R"] button to exit that mode.
- Modes with (X) in the Mark column are not used for servicing and therefore are not described in detail. If these modes are set accidentally, press the [MENU/NO "R"] button to exit the mode immediately. Be especially careful not to set the modes with (!) as they will overwrite the non-volatile memory and reset it, and as a result, the unit will not operate normally.

4-5-1. Operating the Continuous Playback Mode

1. Entering the continuous playback mode
   ① Set the disc in the unit. (Whichever recordable discs or discs for playback only are available.)
   ② Press the |◀◀/TUNING – button or ▶▶|/TUNING + button and display “CPLAY MODE”.
   ③ Press the ENTER/YES “R” button to change the display to “CPLAY MID”.
   ④ When access completes, the display changes to “C1 = AD = ”.
   Note : The numbers “” displayed show you error rates and “ADER”.
2. Changing the parts to be played back
   ① Press the ENTER/YES “R” button during continuous playback to change the display as below.
   “CPLAY MID” → “CPLAY OUT” → “CPLAY IN”
   When pressed another time, the parts to be played back can be moved.
   ② When access completes, the display changes to “C1 = AD = ”.
   Note : The numbers “” displayed show you error rates and “ADER”.
3. Ending the continuous playback mode
   ① Press the MENU/NO “R” button. The display will change to “CPLAY MODE”.
   ② Press the ⏏ (MD) button to remove the disc.
   Note : The playback start addresses for IN, MID, and OUT are as follows.
   IN 40h cluster
   MID 300h cluster
   OUT 700h cluster

4-5-2. Operating the Continuous Recording Mode (Use only when performing self-recording/palyback check.)

1. Entering the continuous recording mode
   ① Set a recordable disc in the unit.
   ② Press the |◀◀/TUNING – button or ▶▶|/TUNING + button and display “CREC MODE”.
   ③ Press the ENTER/YES “R” button to change the display to “CREC MID”.
   ④ When access completes, the display changes to “CREC ()” and ● MD indicator lights up.
   Note : The numbers “” displayed show you the recording position addresses.
2. Changing the parts to be recorded
   ① When the ENTER/YES “R” button is pressed during continuous recording, the display changes as below.
   “C REC MID” → “C REC OUT” → “C REC IN”
   When pressed another time, the parts to be recorded can be changed. ● MD indicator goes off.
   ② When access completes, the display changes to “CREC ()” and ● MD indicator lights up.
   Note : The numbers “” displayed shows you the recording position addresses.
3. Ending the continuous recording mode
   ① Press the MENU/NO “R” button. The display changes to “CREC MODE” and ● MD indicator goes off.
   ② Press the ⏏ (MD) button to remove the disc.
   Note 1 : The recording start addresses for IN, MID, and OUT are as follows.
   IN 40h cluster
   MID 300h cluster
   OUT 700h cluster
   Note 2 : The MENU/NO “R” button can be used to stop recording anytime.
   Note 3 : Do not perform continuous recording for long periods of time above 5 minutes.
   Note 4 : During continuous recording, be careful not to apply vibration.

4-5-3. Non-Volatile Memory Mode (EEP MODE)

This mode reads and writes the contents of the non-volatile memory.
It is not used in servicing. If set accidentally, press the MENU/NO “R” button immediately to exit it.

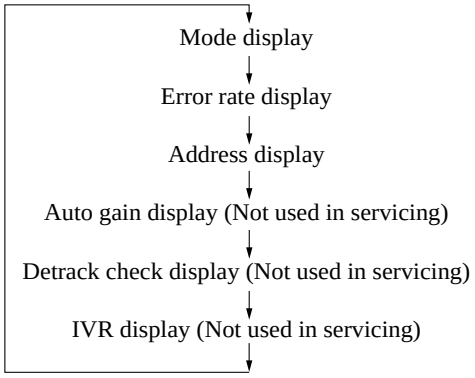
4-6. FUNCTIONS OF OTHER BUTTONS

Function	Contents
MD ▷/II	Sets continuous playback when pressed in the STOP state. When pressed during continuous playback, the tracking servo turns ON/OFF.
□	Stops continuous playback and continuous recording.
▶▶▷▷I/TUNING +	The sled moves to the outer circumference only when this is pressed.
I◁◁◀◀/TUNING –	The sled moves to the inner circumference only when this is pressed.
CLEAR "R"	Switches between the pit and groove modes when pressed.
PLAY MODE/DIRECTION/TUNING MODE	Switches the spindle servo mode (CLV S ⟷ CLV A).
DISPLAY "R"	Switches the displayed contents each time the button is pressed.
⏏ (MD)	Ejects the disc
REPEAT/DOLBY NR/STEREO/MONO	Exits the test mode

Use the remote commander (RM-SJ373/provided with unit: 1-418-554-11) buttons for operations indicated as "R".

4-7. TEST MODE DISPLAYS

Each time the DISPLAY "R" button is pressed, the display changes in the following order.


Mode display
Error rate display
Address display
Auto gain display (Not used in servicing)
Detrack check display (Not used in servicing)
IVR display (Not used in servicing)

1. Mode display

Displays "TEMP ADJUST", "CPLAYMODE", etc.

2. Error rate display

Displays the error rate in the following way.

C1 = □□□□AD = □□
C1 = : Indicates the C1 error.
AD = : Indicates ADER.

3. Address display

The address is displayed as follows. (MO:recordable disc, CD:playback only disc)
Pressing the CLEAR "R" button switches between the groove display and pit display.
h = □□□□ s = □□□□ (MO pit and CD)
h = □□□□ a = □□□□ (MO groove)
h = : Indicates the header address.
s = : Indicates the SUBQ address.
a = : Indicates the ADIP address.

Note: "–" is displayed when servo is not imposed.

4. Auto gain display (Not used in servicing)

The auto gain is displayed as follows.
AG = □□ / □□ [□□]

5. Detrack check display (Not used in servicing)

The detrack is displayed as follows.
ADR = □□□□□□□

6. IVR display (Not used in servicing)

The IVR is displayed as follows.
[□□][□□][□□

MEANINGS OF OTHER DISPLAYS

Display	Contents	
	When Lit	When Off
MD▷II (green)*	During continuous playback (CLV: ON)	STOP (CLV: OFF)
MD▷II (orange)*	Tracking servo OFF	Tracking servo ON
● MD*	Recording mode ON	Recording mode OFF
SYNC	CLV low speed mode	CLV normal mode
LEVEL-SYNC	ABCD adjustment completed	
OVER	Tracking offset cancel ON	Tracking offset cancel OFF
1	Tracking auto gain OK	
REPEAT	Focus auto gain OK	
TRACK	Pit	Groove
DISC	High reflection	Low reflection
SHUFFLE	CLV S	CLV A
MONO	CLV LOCK	CLV UNLOCK

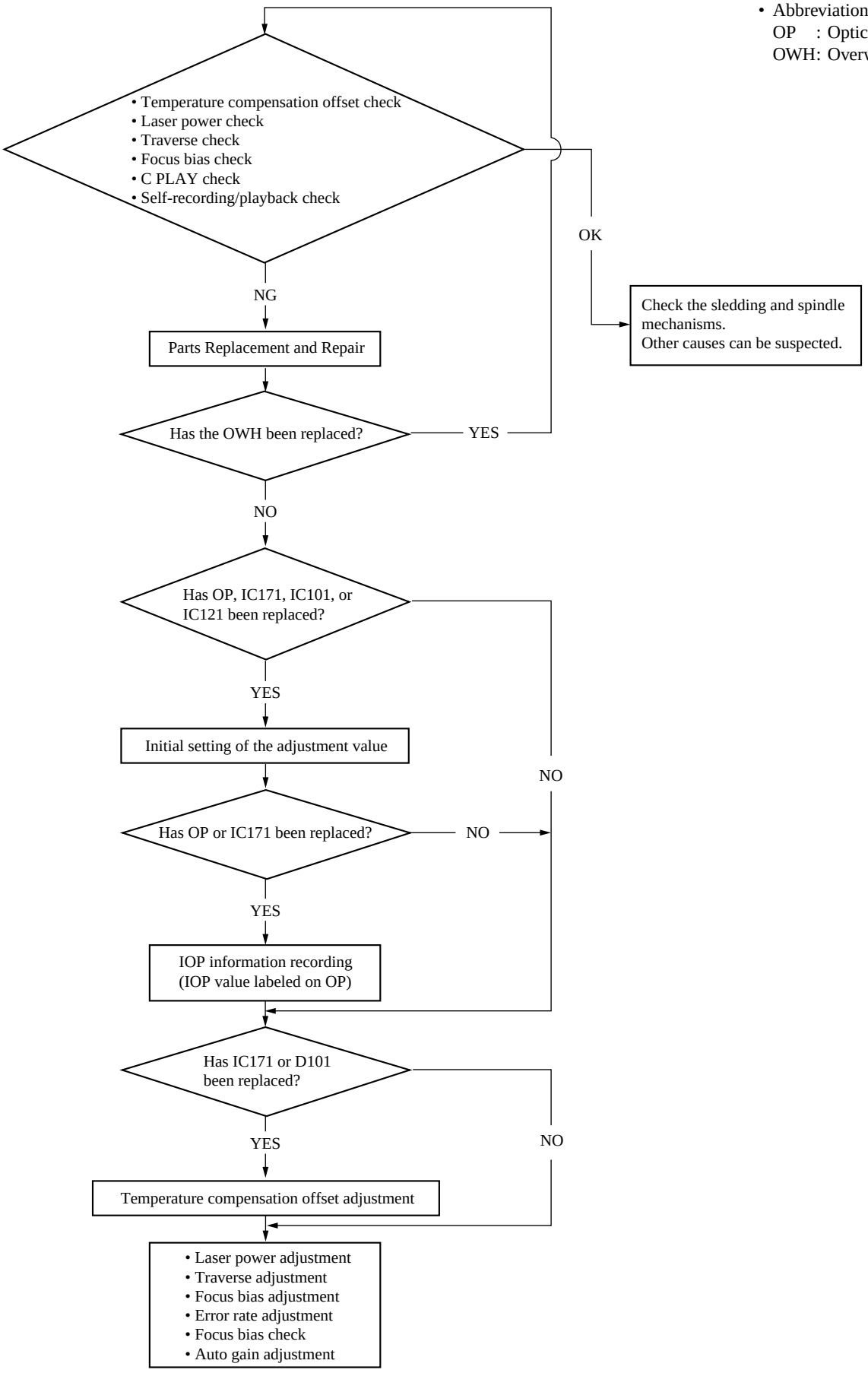
* Items shown correspond to the indicated button indicators.

SECTION 5
ELECTRICAL ADJUSTMENTS

MD SECTION

5-1. Parts Replacement and Adjustment

• Check and adjust the MDM and MBU as follows.
The procedure changes according to the part replaced

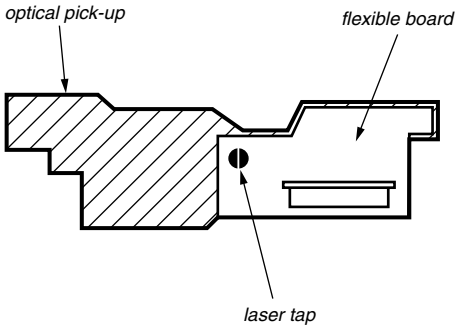


5-2. PRECAUTIONS FOR CHECKING LASER DIODE EMISSION

To check the emission of the laser diode during adjustments, never view directly from the top as this may lose your eye-sight.

5-3. PRECAUTIONS FOR USE OF OPTICAL PICK-UP (KMS-260B)

As the laser diode in the optical pick-up is easily damaged by static electricity, solder the laser tap of the flexible board when using it. Before disconnecting the connector, desolder first. Before connecting the connector, be careful not to remove the solder. Also take adequate measures to prevent damage by static electricity. Handle the flexible board with care as it breaks easily.



Optical pick-up flexible board

5-4. PRECAUTIONS FOR ADJUSTMENTS

1) When replacing the following parts, perform the adjustments and checks with **O** in the order shown in the following table.

	Optical Pick-up	BD Board			
		IC171	D101	IC101, IC121	IC192
1. Initial setting of adjustment value	O	O	×	O	×
2. Recording of IOP information (Value written in the pick-up)	O	O	×	×	×
3. Temperature compensation offset adjustment	×	O	O	×	×
4. Laser power adjustment	O	O	×	O	O
5. Traverse adjustment	O	O	×	O	×
6. Focus bias adjustment	O	O	×	O	×
7. Error rate check	O	O	×	O	×
8. Auto gain output level adjustment	O	O	×	O	×

2) Enter the test mode when performing adjustments.
After completing the adjustments, exit the test mode.
Perform the adjustments and checks in “group S” of the test mode.

3) Perform the adjustments to be needed in the order shown.
4) Use the following tools and measuring devices.
- Check Disc (MD) TDYS-1
(Parts No. 4-963-646-01)
- Test Disk (MDW-74/AU-1) (Parts No. 8-892-341-41)
- Laser power meter LPM-8001 (Parts No. J-2501-046-A) or MD Laser power meter 8010S (Parts No. J-2501-145-A) NOTE 1:
- Oscilloscope (Measure after performing CAL of prove.)
- Digital voltmeter
- Thermometer
- Jig for checking BD board waveform
(Parts No. : J-2501-149-A)

5) When observing several signals on the oscilloscope, etc., make sure that VC and ground do not connect inside the oscilloscope.
(VC and ground will become short-circuited.)
6) Using the above jig enables the waveform to be checked without the need to solder.
(Refer to Servicing Note on page 11.)
7) As the disc used will affect the adjustment results, make sure that no dusts nor fingerprints are attached to it.

Note:
When performing laser power checks and adjustment (electrical adjustment), use of the new MD laser power meter 8010S (J-2501-145-A) instead of the conventional laser power meter is convenient. It sharply reduces the time and trouble to set the laser power meter sensor onto the objective lens of the optical pick-up.

5-5. CREATING CONTINUOUSLY RECORDED DISC

* This disc is used in focus bias adjustment and error rate check.
The following describes how to create a continuous recording disc.

1. Insert a disc (blank disc) commercially available.
2. Press the ⏮/◀◀/TUNING – button or ▶▶/⏭/TUNING + button and display “CREC MODE”.
3. Press the ENTER/YES “R” button again to display “CREC MID”.
Display “CREC (0300)” and start to recording.
4. Complete recording within 5 minutes.
5. Press the MENU/NO “R” button and stop recording .
6. Press the ⏏ (MD) button and remove the disc.

The above has been how to create a continuous recorded data for the focus bias adjustment and error rate check.

Note :
- Be careful not to apply vibration during continuous recording.

Note 1: About “R”
As this unit has only a few buttons, some operations require the use of remote commander (RM-SJ373/provided with unit: 1-418-554-11) buttons. These operations are indicated as “R” in this manual.
Example: MENU/NO “R” ...Press the MENU/NO button of the remote commander.

5-6. Checks Prior to Repairs

These checks are performed before replacing parts according to "approximate specifications" to determine the faulty locations. For details, refer to "Checks Prior to Parts Replacement and Adjustments" (See page 14).

5-6-1. Temperature Compensation Offset Check

When performing adjustments, set the internal temperature and room temperature to 22 to 28°C.

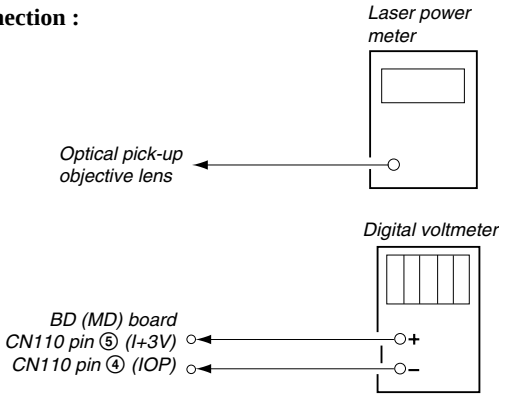
Checking Procedure:

1. Press the ⏮◀◀/TUNING – button or ▶▶⏭/TUNING + button to display "TEMP CHECK".
2. Press the ENTER/YES "R" button.
3. "T=@@(##) [OK]" should be displayed. If "T=@@ (##) [NG]" is displayed, it means that the results are bad.
   (@@ indicates the current value set, and ## indicates the value written in the non-volatile memory.)

5-6-2. Laser Power Check

Before checking, check the IOP value of the optical pick-up.
(Refer to "5-8. Recording and Displaying IOP Information".)

Connection :



Checking Procedure:

1. Set the laser power meter on the objective lens of the optical pick-up. (When it cannot be set properly, press the ⏮◀◀/TUNING – button or ▶▶⏭/TUNING + button continuously to move the optical pick-up.)
   Connect the digital volt meter to CN110 pin ⑤ (I+3V) and CN110 pin ④ (IOP).
2. Then, press the ⏮◀◀/TUNING – button or ▶▶⏭/TUNING + button and display "LDPWR CHECK".
3. Press the ENTER/YES "R" button once and display "LD 0.9 mW $ ". Check that the reading of the laser power meter become 0.84 to 0.92 mW.
4. Press the ENTER/YES "R" button once more and display "LD 7.0 mW $ ". Check that the reading of the laser power meter and digital volt meter satisfy the specified value.

Specified Value :

Laser power meter reading : 7.0 ± 0.2 mW
Digital voltmeter reading : Optical pick-up displayed value ± 10%

(Optical pick-up label)

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27X40
B0825

(For details of the method for checking this value, refer to "5-8. Recording and Displaying IOP Information".)

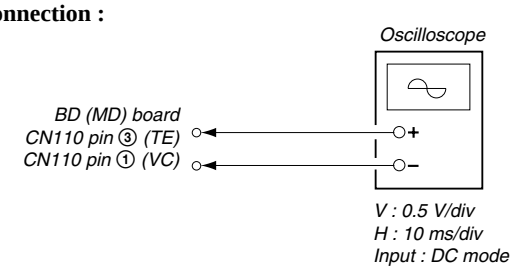
Iop = 82.5 mA in this case
Iop (mA) = Digital voltmeter reading (mV)/1 (Ω)

5. Press the MENU/NO "R" button and display "LDPWR CHECK" and stop the laser emission.
   (The MENU/NO "R" button is effective at all times to stop the laser emission.)

Note 1: After step 4, each time the ENTER/YES "R" button is pressed, the display will be switched between "LD 0.7 mW $ ", "LD 6.2 mW $ ", and "LD WP ホセイ $ ". Nothing needs to be performed here.

5-6-3. Traverse Check

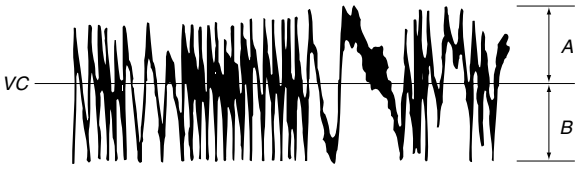
Connection :



Checking Procedure:

1. Connect an oscilloscope to CN110 pin ③ (TE) and CN110 pin ① (VC) of the BD board.
2. Load a disc (any available on the market). (Refer to Note 1.)
3. Press the ▶▶⏭/TUNING + button continuously and move the optical pick-up outside the pit.
4. Press the ⏮◀◀/TUNING – button or ▶▶⏭/TUNING + button and display "EF MO CHECK".
5. Press the ENTER/YES "R" button and display "EFB = MO-R".
   (Laser power READ power/Focus servo ON/tracking servo OFF/spindle (S) servo ON)
6. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not press the ⏮◀◀/TUNING – button or ▶▶⏭/TUNING + button.
   (Read power traverse checking)

(Traverse Waveform)

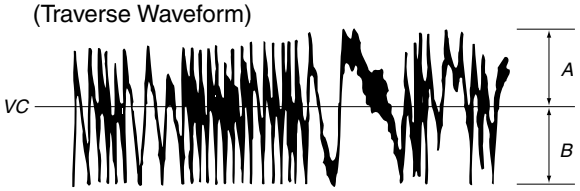


Specified value : 10% or less of the offset value

$$\text{Offset value (\%)} = \frac{|A - B|}{2\,(A + B)} \times 100$$

7. Press the ENTER/YES "R" button and display "EFB = MO-W".
8. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not press the ⏮◀◀/TUNING – button or ▶▶⏭/TUNING + button.
   (Write power traverse checking)

(Traverse Waveform)

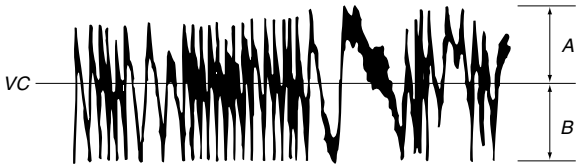


Specified value : 10% or less of the offset value

$$\text{Offset value (\%)} = \frac{|A - B|}{2\,(A + B)} \times 100$$

9. Press the [ENTER/YES "R"] button and display "EFB = □□ MO-P".Then, the optical pick-up moves to the pit area automatically and servo is locked.
10. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not press the [⏮◀◀/TUNING –] button or [▶▶▷▷⏭/TUNING +] button.

(Traverse Waveform)

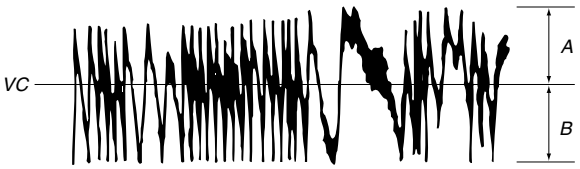


Specified value : 10% or less of the offset value

$$\text{Offset value (\%)} = \frac{|A - B|}{2\,(A + B)} \times 100$$

11. Press the [ENTER/YES "R"] button and display "EF MO CHECK" The disc stops rotating automatically.
12. Press the [⏏ (MD)] button and remove the disc.
13. Load the check disc (MD) TDYS-1.
14. Press the [▶▶▷▷⏭/TUNING +] button and display "EF CD CHECK".
15. Press the [ENTER/YES "R"] button and display "EFB = □□ CD". Servo is locked automatically.
16. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not press the [⏮◀◀/TUNING –] button or [▶▶▷▷⏭/TUNING +] button.

(Traverse Waveform)



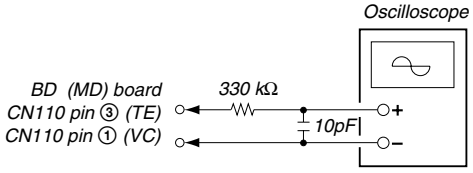
Specified value : 10% or less of the offset value

$$\text{Offset value (\%)} = \frac{|A - B|}{2\,(A + B)} \times 100$$

17. Press the [ENTER/YES "R"] button and display "EF CD CHECK".
18. Press the [⏏ (MD)] button and remove the check disc (MD) TDYS-1.

Note 1 : MO reading data will be erased during if a recorded disc is used in this adjustment.

Note 2 : If the traverse waveform is not clear, connect the oscilloscope as shown in the following figure so that it can be seen more clearly.



5-6-4. Focus Bias Check

Change the focus bias and check the focus tolerance amount.

Checking Procedure :

1. Load a test disk (MDW-74/AU-1).
2. Press the [⏮◀◀/TUNING –] button or [▶▶▷▷⏭/TUNING +] button and display "CPLAY MODE".
3. Press the [ENTER/YES "R"] button twice and display "CPLAY MID".
4. Press the [MENU/NO "R"] button when "C1 = □□□□ AD = □□" is displayed.
5. Press the [⏮◀◀/TUNING –] button or [▶▶▷▷⏭/TUNING +] button and display "FBIAS CHECK".
6. Press the [ENTER/YES "R"] button and display " □□□□/□□ c = □□".
   The first four digits indicate the C1 error rate, the two digits after "/" indicate ADER, and the 2 digits after "c =" indicate the focus bias value.
   Check that the C1 error is 50 or less and ADER is 2 or less.
7. Press the [ENTER/YES "R"] button and display " □□□□/□□ b = □□".
   Check that the C1 error is 220 or less and ADER is 2 or less.
8. Press the [ENTER/YES "R"] button and display " □□□□/□□ a = □□".
   Check that the C1 error is 220 or less and ADER is 2 or less.
9. Press the [MENU/NO "R"] button, next press the [⏏ (MD)] button, and remove the test disc.

5-6-5. C PLAY Checking

MO Error Rate Check

Checking Procedure :

1. Load a test disk (MDW-74/AU-1).
2. Press the [⏮◀◀/TUNING –] button or [▶▶▷▷⏭/TUNING +] button and display "CPLAY MODE".
3. Press the [ENTER/YES "R"] button and display "CPLAY MID".
4. The display changes to "C1 = □□□□ AD = □□".
5. If the C1 error rate is 50 or less, check that ADER is 2 or less.
6. Press the [MENU/NO "R"] button, stop playback, press the [⏏ (MD)] button, and test disc.

CD Error Rate Check

Checking Procedure :

1. Load a check disc (MD) TDYS-1.
2. Press the [⏮◀◀/TUNING –] button or [▶▶▷▷⏭/TUNING +] button and display "CPLAY MODE".
3. Press the [ENTER/YES "R"] button twice and display "CPLAY MID".
4. The display changes to "C1 = □□□□ AD = □□".
5. Check that the C1 error rate is 20 or less.
6. Press the [MENU/NO "R"] button, stop playback, press the [⏏ (MD)] button, and the test disc.

5-6-6. Self-Recording/playback Check

Prepare a continuous recording disc using the unit to be repaired and check the error rate.

Checking Procedure :

1. Insert a recordable disc (blank disc) into the unit.
2. Press the [⏮◀◀/TUNING –] button or [▶▶▷▷⏭/TUNING +] button to display "CREC MODE".
3. Press the [ENTER/YES "R"] button to display the "CREC MID".
4. When recording starts, [● MD] indicator lights up displayed, this becomes "CREC (@@@@)" (@@@@ is the address), and recording starts.
5. About 8 seconds later, press the [MENU/NO "R"] button to stop continuous recording.
6. Press the [⏮◀◀/TUNING –] button or [▶▶▷▷⏭/TUNING +] button to display "C PLAY MODE".
7. Press the [ENTER/YES "R"] button to display "C PLAY MID".

8. "C1 = ⬚⬚⬚ AD = ⬚⬚" will be displayed.
9. Check that the C1 error becomes 50 or less and the AD error 2 or less.
10. Press the MENU/NO "R" button to stop playback, and press the ⏏ (MD) button and remove the disc.

5-7. Initial Setting of Adjustment Value

Note:
This is mode that is used to return the adjustment results recordedin the non-volatile memory to the initial setting value. However the results of the temperature compensation offset adjustment cannot be returned to the initial setting value.
If the setting are returned to the initial setting value, perform all adjustments again excluding the temperature compensation offset adjustment.
For details of the initial setting, refer to "5-4. Precautions on Adjustments" and execute the initial setting before the adjustment as required.

Setting Procedure :
1. Press the ⏮◀◀/TUNING – button or ▶▶▷▷⏭/TUNING + button to display "ADJ CLEAR".
2. Press the ENTER/YES "R" button. "Complete!" will be displayed momentarily and initial setting will be executed, after which "ADJ CLEAR" will be displayed.

5-8.Recording and Displaying the IOP Information

The IOP data can be recorded in the non-volatile memory. The IOP value on the label of the optical pickup and the IOP value after the adjustment will be recorded. Recording these data eliminates the need to read the label on the optical pick-up.

Recording Procedure :
1. When the power ON, press the I/⏻ button while pressing the □ button and ● TAPE button together.
2. Press the ⏮◀◀/TUNING – button or ▶▶▷▷⏭/TUNING + button to display "[Service]", and press the ENTER/YES "R" button. (If nothing is displayed, press the FUNCTION button and set the function to "MD".
3. Press the ⏮◀◀/TUNING – button or ▶▶▷▷⏭/TUNING + button to display "Iop Write", and press the ENTER/YES "R" button.
4. The display becomes "Ref=@@@.@" (@ is an arbitrary number) and the numbers which can be changed will blink.
5. Input the IOP value written on the optical pick-up.
   To select the number : Press the ⏮◀◀/TUNING – button or ▶▶▷▷⏭/TUNING + button.
   To select the digit : Press the SYNCHRO REC button.

Note: If a message "Cannot SYNC!" or "NO TAPE" appears momentarily, press the SYNCHRO REC button several times until "CD-MD SYNC?" appears momentarily.

6. When the ENTER/YES "R" button is pressed, the display becomes "Measu=@@@.@" (@ is an arbitrary number).
7. As the adjustment results are recorded for the 6 value. Leave it as it is and press the ENTER/YES "R" button.
8. "Complete!" will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become "Iop Write".

Display Procedure :
1. Press the ⏮◀◀/TUNING – button or ▶▶▷▷⏭/TUNING + button to display "Iop Read".
2. When the ENTER/YES "R" button is pressed, "@@.@/##.#" will be displayed and the recorded contents are displayed.
   @@.@ indicates the Iop value labeled on the pick-up.
   ##.# indicates the Iop value after adjustment
3. To end, press the MENU/NO "R" button to display "Iop Read".

5-9. TEMPERATURE COMPENSATION OFFSET ADJUSTMENT

Save the temperature data at that time in the non-volatile memory as 25 ˚C reference data.

Note :
1. Usually, do not perform this adjustment.
2. Perform this adjustment in an ambient temperature of 22 ˚C to 28 ˚C. Perform it immediately after the power is turned on when the internal temperature of the unit is the same as the ambient temperature of 22 ˚C to 28 ˚C.
3. When D101 has been replaced, perform this adjustment after the temperature of this part has become the ambient temperature.

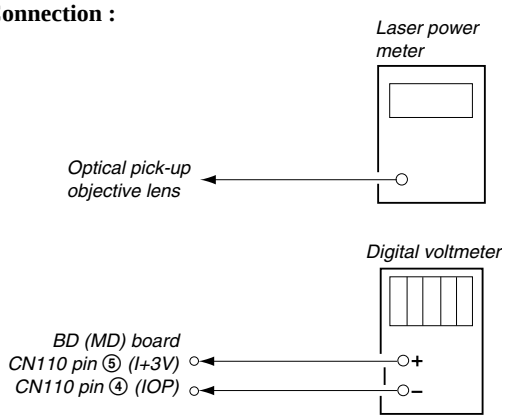
Adjusting Procedure :
1. Press the ⏮◀◀/TUNING – button or ▶▶▷▷⏭/TUNING + button and display "TEMP ADJUST".
2. Press the ENTER/YES "R" button and select the "TEMP ADJUST" mode.
3. "TEMP = ⬚ [OK]" and the current temperature data will be displayed.
4. To save the data, press the ENTER/YES "R" button.
   When not saving the data, press the MENU/NO "R" button.
5. When the ENTER/YES "R" button is pressed, "TEMP = ⬚ SAVE" will be displayed and turned back to "TEMP ADJUST" display then. When the MENU/NO "R" button is pressed, "TEMP ADJUST" will be displayed immediately.

Specified Value :
The "TEMP = ⬚" should be within "E0 - EF", "F0 - FF", "00 - 0F", "10 - 1F" and "20 - 2F".

5-10. LASER POWER ADJUSTMENT

Before starting adjustment:
Check the IOP value of the optical pick-up before adjustments. (Refer to "5-8. Recording and Displaying IOP Information".)

Connection :



Adjusting Procedure :
1. Set the laser power meter on the objective lens of the optical pick-up. (When it cannot be set properly, press the ⏮◀◀/TUNING – button or ▶▶▷▷⏭/TUNING + button continuously to move the optical pick-up.)
   Connect the digital voltmeter to CN110 pin ⑤ (I+3V) and CN110 pin ④ (IOP).
2. Press the ⏮◀◀/TUNING – button or ▶▶▷▷⏭/TUNING + button and display "LDPWR ADJUST".
   (Laser power : For adjustment)

3. Press the ENTER/YES "R" button once and display "LD 0.9 mW $ ".
4. Press the ⏮/TUNING – button or ⏭/TUNING + button so that the reading of the laser power meter becomes 0.85 to 0.91 mW. Press the ENTER/YES "R" button after setting the range knob of the laser power meter, and save the adjustment results. ("LD SAVE $ " will be displayed for a moment.)
5. Then "LD 7.0 mW $ " will be displayed.
6. Press the ⏮/TUNING – button or ⏭/TUNING + button so that the reading of the laser power meter becomes 6.9 to 7.1 mW, press the ENTER/YES "R" button and save it.

Note : Do not perform the emission with 7.0 mW more than 15 seconds continuously.

7. Then, press the ⏮/TUNING – button or ⏭/TUNING + button and display "LDPWR CHECK".
8. Press the ENTER/YES "R" button once and display "LD 0.9 mW $ ". Check that the reading of the laser power meter becomes 0.85 to 0.91 mW.
9. Press the ENTER/YES "R" button once more and display "LD 7.0 mW $ ". Check that the reading the laser power meter and digital volt meter satisfy the specified value.
   Note down the digital voltmeter reading value.

Specified Value :

Laser power meter reading : 7.0 ± 0.1 mW
Digital voltmeter reading : Optical pick-up displayed value ± 10%

(Optical pick-up label)

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27X40
B0825

(For details of the method for checking this value, refer to "5-8. Recording and Displaying IOP Information".)

Iop = 82.5 mA in this case
Iop (mA) = Digital voltmeter reading (mV)/1 (Ω)

10. Press the MENU/NO "R" button and display "LDPWR CHECK" and stop the laser emission.
    (The MENU/NO "R" button is effective at all times to stop the laser emission.)
11. Press the ⏮/TUNING – button or ⏭/TUNING + button to display "Iop Write".
12. Press the ENTER/YES "R" button. When the display becomes Ref=@@@.@ (@ is an arbitrary number), press the ENTER/YES "R" button to display "Measu=@@@.@" (@ is an arbitrary number).
13. The numbers which can be changed will blink. Input the Iop value noted down at step 9.
    To select the number : Press the ⏮/TUNING – button or ⏭/TUNING + button.
    To select the digit : Press the SYNCHRO REC button.
    Selection of digit : Press the SYNCHRO REC button and the ENTER/START button at the same time quickly. Note 1:

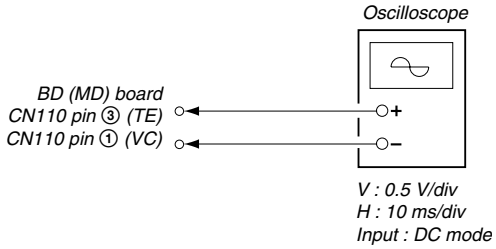
Note 1: If a message "Cannot SYNC!" or "NO TAPE" appears momentarily, press SYNCHRO REC button several times until "CD-MD SYNC?" appears momentarily.

14. When the ENTER/YES "R" button is pressed, "Complete!" will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become "Iop Write".

Note 2: After step 9, each time the ENTER/YES "R" button is pressed, the display will be switched between "LD 0.7 mW $ ", "LD 6.2 mW $ ", and "LD Wp ホセイ $ ". Nothing needs to be performed here.

5-11. TRAVERSE ADJUSTMENT

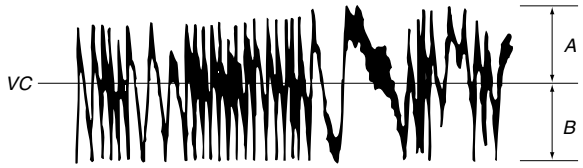
Connection :



Adjusting Procedure :

1. Connect an oscilloscope to CN110 pin ③ (TE) and CN110 pin ① (VC) of the BD board.
2. Load a disc (any available on the market). (Refer to Note 1.)
3. Press the ⏭/TUNING + button continuously and move the optical pick-up outside the pit.
4. Press the ⏮/TUNING – button or ⏭/TUNING + button and display "EF MO ADJUST".
5. Press the ENTER/YES "R" button and display "EFB = MO-R".
   (Laser power READ power/Focus servo ON/tracking servo OFF/spindle (S) servo ON)
6. Press the ⏮/TUNING – button or ⏭/TUNING + button so that the waveform of the oscilloscope becomes the specified value.
   (When the ⏮/TUNING – button or ⏭/TUNING + button is pressed, the of "EFB= " changes and the waveform changes.) In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.
   (Read power traverse adjustment)

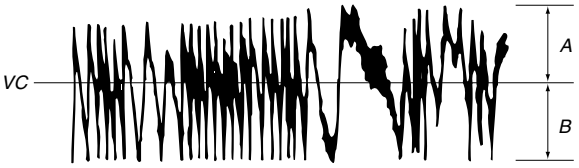
(Traverse Waveform)



Specification : A = B

7. Press the ENTER/YES "R" button and save the result of adjustment to the non-volatile memory ("EFB = SAVE" will be displayed for a moment. Then "EFB = MO-W" will be displayed).
8. Press the ⏮/TUNING – button or ⏭/TUNING + button so that the waveform of the oscilloscope becomes the specified value.
   (When the ⏮/TUNING – button or ⏭/TUNING + button is pressed, the of "EFB- " changes and the waveform changes.) In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.
   (Write power traverse adjustment)

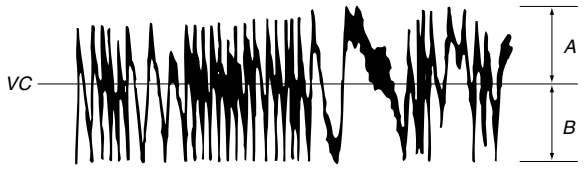
(Traverse Waveform)



Specification : A = B

9. Press the [ENTER/YES "R"] button, and save the adjustment results in the non-volatile memory. ("EFB = ▯▯ SAVE" will be displayed for a moment.)
10. "EFB = ▯▯ MO-P" will be displayed.
    The optical pick-up moves to the pit area automatically and servo is imposed.
11. Press the [⏮◀◀/TUNING –] button or [▶▶⏭/TUNING +] button until the waveform of the oscilloscope moves closer to the specified value.
    In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.

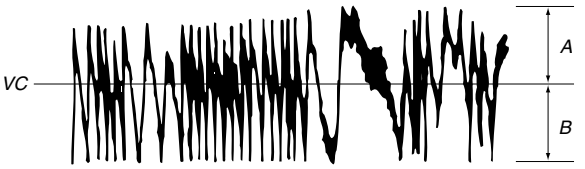
(Traverse Waveform)



Specification : A = B

12. Press the [ENTER/YES "R"] button, and save the adjustment results in the non-volatile memory. ("EFB = ▯▯ SAVE" will be displayed for a moment.)
    Next "EF MO ADJUST" is displayed. The disc stops rotating automatically.
13. Press the [⏏ (MD)] button and remove the disc.
14. Load the check disc (MD) TDYS-1.
15. Press the [⏮◀◀/TUNING –] button or [▶▶⏭/TUNING +] button and display "EF CD ADJUST".
16. Press the [ENTER/YES "R"] button and display "EFB = ▯▯ CD". Servo is locked automatically.
17. Press the [⏮◀◀/TUNING –] button or [▶▶⏭/TUNING +] button so that the waveform of the oscilloscope moves closer to the specified value.
    In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.

(Traverse Waveform)

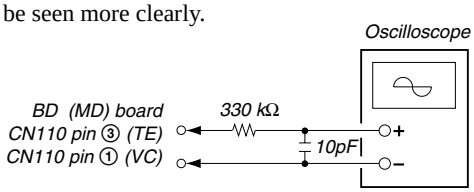


Specification : A = B

18. Press the [ENTER/YES "R"] button, display "EFB = ▯▯ SAVE" for a moment and save the adjustment results in the non-volatile memory.
    Next "EF CD ADJUST" will be displayed.
19. Press the [⏏ (MD)] button and remove the check disc (MD) TDYS-1.

Note 1 : MO reading data will be erased during if a recorded disc is used in this adjustment.

Note 2 : If the traverse waveform is not clear, connect the oscilloscope as shown in the following figure so that it can be seen more clearly.



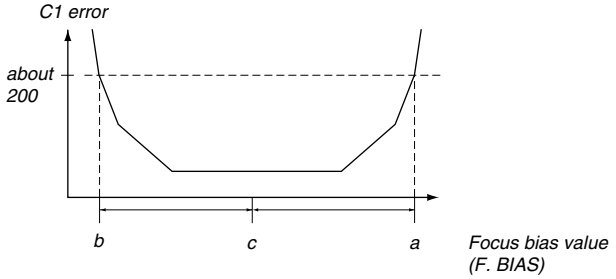
5-12. FOCUS BIAS ADJUSTMENT

Adjusting Procedure :

1. Load a test disk (MDW-74/AU-1).
2. Press the [⏮◀◀/TUNING –] button or [▶▶⏭/TUNING +] button and display "CPLAY MODE".
3. Press the [ENTER/YES "R"] button and display "CPLAY MID".
4. Press the [MENU/NO "R"] button when "C1 = ▯▯▯▯ AD = ▯▯" is displayed.
5. Press the [⏮◀◀/TUNING –] button or [▶▶⏭/TUNING +] button and display "FBIAS ADJUS".
6. Press the [ENTER/YES "R"] button and display " ▯▯▯▯/▯▯ a = ▯▯".
   The first four digits indicate the C1 error rate, the two digits after " / " indicate ADER, and the 2 digits after " a = " indicate the focus bias value.
7. Press the [▶▶⏭/TUNING +] button and find the focus bias value at which the C1 error rate becomes about 200 (Refer to Note 2).
8. Press the [ENTER/YES "R"] button and display " ▯▯▯▯/▯▯ b = ▯▯".
9. Press the [⏮◀◀/TUNING –] button and find the focus bias value at which the C1 error rate becomes about 200.
10. Press the [ENTER/YES "R"] button and display " ▯▯▯▯/▯▯ c = ▯▯".
11. Check that the C1 error rate is 50 or less and ADER is 00. Then press the [ENTER/YES "R"] button.
12. If the "(▯▯)" in "▯▯ - ▯▯ - ▯▯ (▯▯)" is above 20, press the [ENTER/YES "R"] button.
    If 20 or less, press the [MENU/NO"R"] button and repeat the adjustment from step 2.
13. Press the [⏏ (MD)] button to remove the test disc.
    Selection of digit : Press the SYNCHRO REC button and the ENTER/START button at the same time quickly. Note 1:

Note 1 : The relation between the C1 error and focus bias is as shown in the following figure. Find points a and b in the following figure using the above adjustment. The focal point position C is automatically calculated from points a and b.

Note 2 : As the C1 error rate changes, perform the adjustment using the average vaue.



5-13. ERROR RATE CHECK

5-13-1. CD Error Rate Check

Checking Procedure :

1. Load a check disc (MD) TDYS-1.
2. Press the ⏮◀◀/TUNING – button or ▶▶▷▷⏭/TUNING + button and display "CPLAY MODE".
3. Press the ENTER/YES "R" button twice and display "CPLAY MID".
4. The display changes to "C1 = □□□□ AD = □□".
5. Check that the C1 error rate is 20 or less.
6. Press the MENU/NO "R" button, stop playback, press the ⏏ (MD) button, and remove the test disc.

5-13-2. MO Error Rate Check

Checking Procedure :

1. Load a test disc (MDW-74/AU-1).
2. Press the ⏮◀◀/TUNING – button or ▶▶▷▷⏭/TUNING + button and display "CPLAY MODE".
3. Press the ENTER/YES "R" button and display "CPLAY MID".
4. The display changes to "C1 = □□□□ AD = □□".
5. If the C1 error rate is 50 or less, check that ADER is 2 or less.
6. Press the MENU/NO "R" button, stop playback, press the ⏏ (MD) button, and remove the test disc.

5-14. FOCUS BIAS CHECK

Change the focus bias and check the focus tolerance amount.

Checking Procedure :

1. Load a test disc (MDW-74/AU-1).
2. Press the ⏮◀◀/TUNING – button or ▶▶▷▷⏭/TUNING + button and display "CPLAY MODE".
3. Press the ENTER/YES "R" button twice and display "CPLAY MID".
4. Press the MENU/NO "R" button when "C1 = □□□□ AD = □□" is displayed.
5. Press the ⏮◀◀/TUNING – button or ▶▶▷▷⏭/TUNING + button and display "FBIAS CHECK".
6. Press the ENTER/YES "R" button and display " □□□□/□□ c = □□".
   The first four digits indicate the C1 error rate, the two digits after "/" indicate ADER, and the 2 digits after "c =" indicate the focus bias value.
   Check that the C1 error is 50 or less and ADER is 2 or less.
7. Press the ENTER/YES "R" button and display " □□□□/□□ b = □□".
   Check that the C1 error is 220 or less and ADER is 2 or less.
8. Press the ENTER/YES "R" button and display " □□□□/□□ a = □□".
   Check that the C1 error is 220 or less and ADER is 2 or less.
9. Press the MENU/NO "R" button, next press the ⏏ (MD) button, and remove the test disc.

Note 1 : If the C1 error and ADER are above other than the specified value at points a (step 8. in the above) or b (step 7. in the above), the focus bias adjustment may not have been carried out properly. Adjust perform the beginning again.

5-15. Auto Gain Control Output Level Adjustment

Be sure to perform this adjustment when the pickup is replaced. If the adjustment results becomes "Adjust NG!", the pickup may be faulty or the servo system circuits may be abnormal.

5-15-1. CD Auto Gain Control Output Level Adjustment

Adjusting Procedure :

1. Insert the check disc (MD) TDYS-1.
2. Press the ⏮◀◀/TUNING – button or ▶▶▷▷⏭/TUNING + button to display "AG Set (CD)".
3. When the ENTER/YES "R" button is pressed, the adjustment will be performed automatically.
   "Complete!!" will then be displayed momentarily when the value is recorded in the non-volatile memory, after which the display changes to "AG Set (CD)".
4. Press the ⏏ (MD) button to remove the disc.

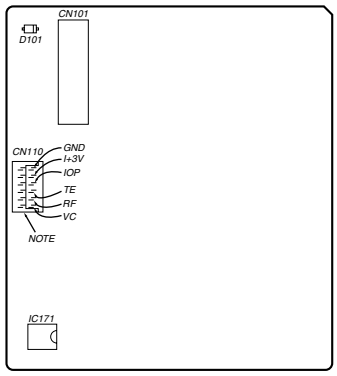
5-15-2. MO Auto Gain Control Output Level Adjustment

Adjusting Procedure :

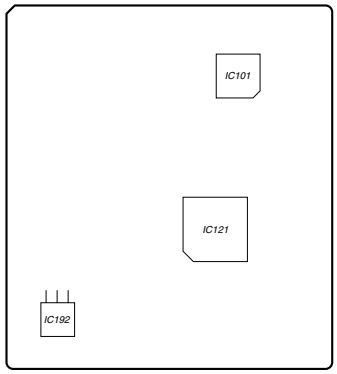
1. Insert the reference disc (MDW-74/AU-1) for recording.
2. Press the ⏮◀◀/TUNING – button to display "AG Set (MO)".
3. When the ENTER/YES "R" button is pressed, the adjustment will be performed automatically.
   "Complete!!" will then be displayed momentarily when the value is recorded in the non-volatile memory, after which the display changes to "AG Set (MO)".
4. Press the ⏏ (MD) button to remove the disc.

5-15. ADJUSTING POINTS AND CONNECTING POINTS

[BD (MD) BOARD] (SIDE A)



[BD (MD) BOARD] (SIDE B)



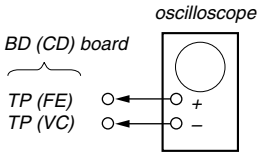
NOTE: It is useful to use the jig for checking the waveform. (Refer to Servicing Note on page 11.)

CD SECTION

Note:

1. CD Block is basically constructed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than 10MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

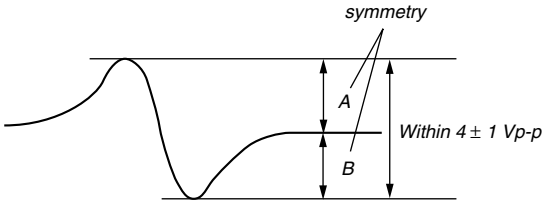
S Curve Check



Procedure :

1. Connect the oscilloscope to test points TP (FE) and TP (VC).
2. Connect TP (FEI) and Ground, and TP (AGCCON) and Ground of the BD board with lead wires.
3. Press the I/⏻ button to turn the set ON.
4. With the disc (YEDS-18) loaded, press the CD ▷II button and perform focus search. (Focus search will be performed in the same way even while the disc table is pushed in and out.)
5. Check the symmetry and peak to peak level of the oscilloscope waveform (S curve) at this time.

S-curve waveform

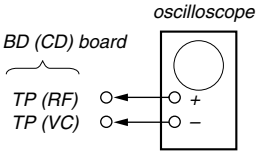


6. After check, remove the lead wire connected in step 2.

Note: • Try to measure several times to make sure that the ratio of A : B or B : A is more than 10 : 7.
• Take sweep time as long as possible and light up the brightness to obtain best waveform.

Checking Location : BD (CD) board

RF Level Check

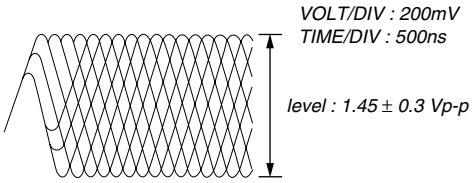


Procedure :

1. Connect oscilloscope to test point TP (RF) and TP (VC) on BD board.
2. Connect TP (AGCCON) and Ground of the BD (CD) board with lead wires.
3. Press the I/⏻ button to turn the set ON.
4. Put disc (YEDS-18) in and playback 5th track.
5. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.
6. After check, remove the lead wire connected in step 2.

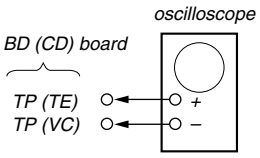
6. After check, remove the lead wire connected in step 2.

Note: Clear RF signal waveform means that the shape "◊" can be clearly distinguished at the center of the waveform.



Checking Location : BD (CD) board

E-F Balance (1 Track Jump) check

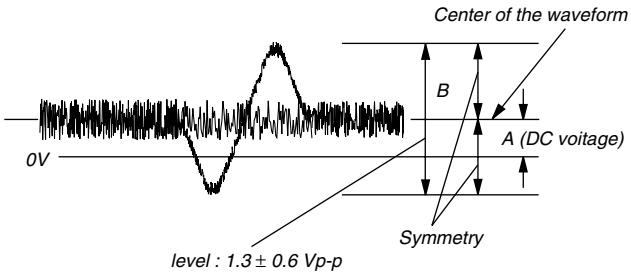


Procedure:

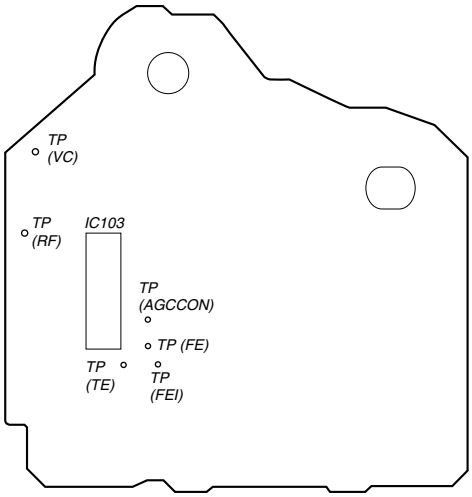
1. Connect oscilloscope to test point TP (TE) and TP (VC) on BD board.
2. Press the I/⏻ button to turn the unit ON.
3. Put disc (YEDS-18) in to play the number five track.
4. Press the CD ▷II button.
5. Check the level B of the oscilloscope's waveform and the A (DC voltage) of the center of the traverse waveform.
   Confirm the following:

   • A/B x 100 = ± 22 (%) or less
   • B = 1.3 ± 0.6 Vp-p

1 track jump waveform



Checking Location : BD (CD) board
[BD (CD) BOARD] — SIDE B —



CASETTE SECTION

0 dB=0.775V

Note: Before starting the adjustment, measure performance of the machine. Perform adjustment only when the measured performances do not satisfy the specifications.

1. Demagnetize the record/playback head with a head demagnetizer.
2. Do not use a magnetized screwdriver for the adjustments.
3. After the adjustments, apply suitable locking compound to the parts adjusted.
4. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

completed before performing recording circuit adjustment.)

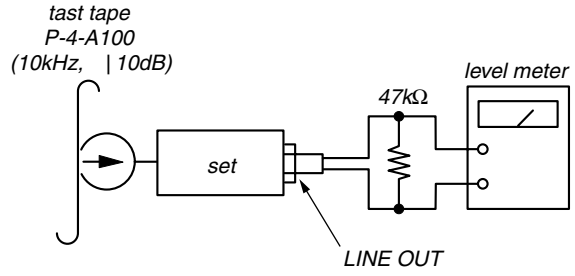
5. The adjustments should be performed in the order given in this service manual. (As a general rule, playback circuit adjustment should be completed before performing recording circuit adjustment.)
6. The adjustments should be performed for both L-CH and R-CH.
7. Switches and controls should be set as follows unless otherwise specified.

Tape	Signal	Used for
P-4-A100	10 kHz, –10 dB	Azimuth Adjustment
WS-48B	3 kHz, 0 dB	Tape Speed Adjustment
P-4-L300	315 Hz, 0 dB	Level Adjustment

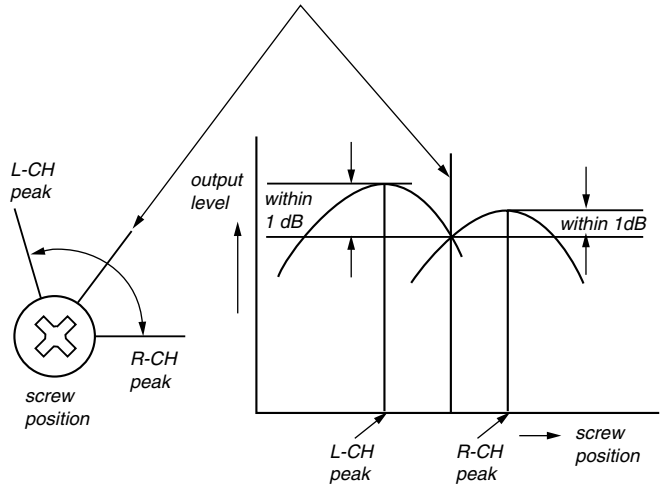
Record/Playback Head Azimuth Adjustment

Procedure:

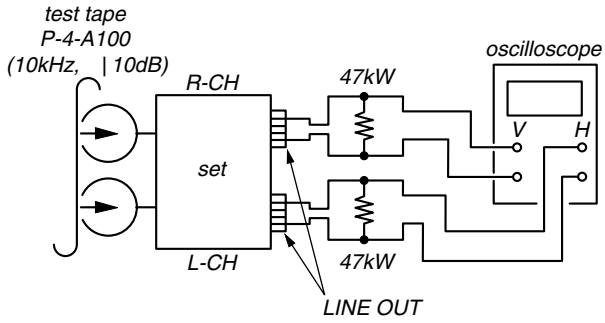
1. Mode : REV playback



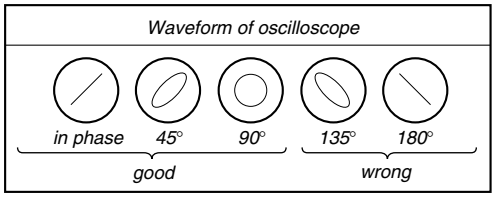
2. Turn the adjustment screw and check output peaks. If the peaks do not match for L-CH and R-CH, turn the adjustment screw so that outputs match within 1 dB of peak.



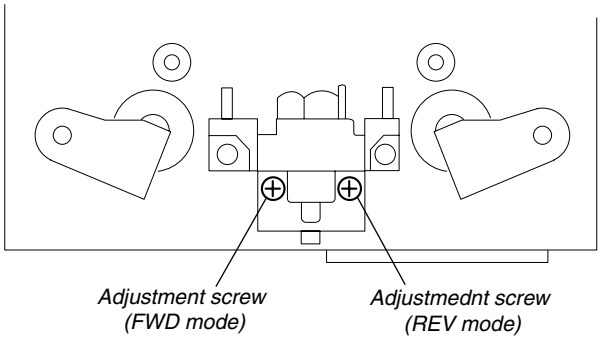
3. Phase check
   Model: REV playback



4. Perform steps 1 to 3 in the FWD playback mode.
5. Confirm that phase error between L-ch and R-ch is in the range of same phase to 90 degrees.
6. After the adjustments, apply suitable locking compound to the parts adjusted.

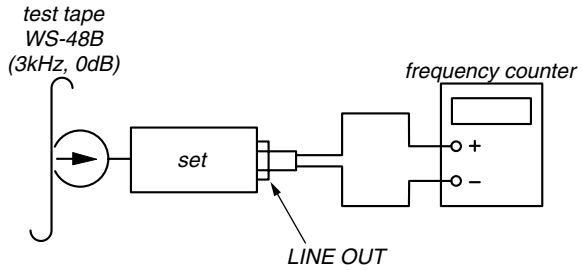


Adjustment Location:



Playback Level Adjustment

Procedure:
Mode: FWD playback

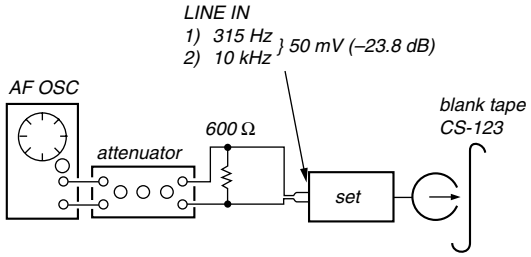


Adjust RV431 (L-CH) and RV481 (R-CH), so that adjustment within the following adjustment level.

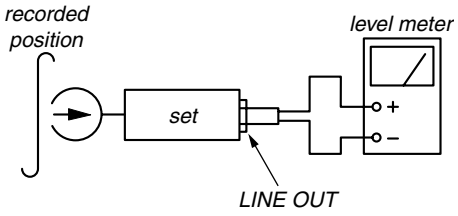
Adjustment level:
LINE OUT level: –7.7 ± 0.5 dB (301.5 to 338.5 mV)
Level difference between the channels: within ± 0.5 dB
Confirm that the LINE OUT level does not change even though play and stop are repeated.

Record Bias Adjustment

Procedure:
1. Record mode.



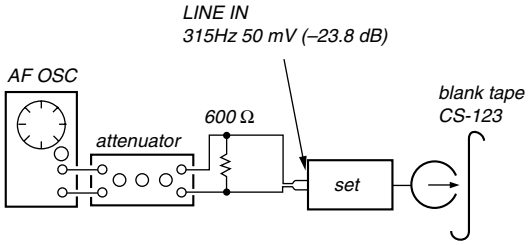
2. Playback mode.



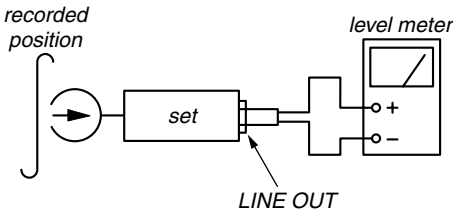
3. Confirm playback the signal recorded in step 1 become adjustment level as follows.
4. If these levels do not adjustment level, adjust the RV440 (L-CH) and RV490 (R-CH), to repeat steps 1 to 3.
   Adjustment level:
   The playback outpout of 10 kHz level difference adjust 315 Hz reference should be 0 dB ± 0.5 dB.

Record Level Adjustment

Procedure:
1. Record mode.

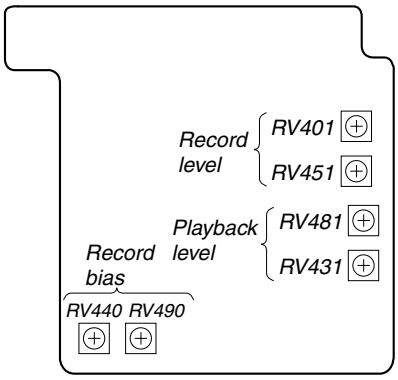


2. Playback mode.



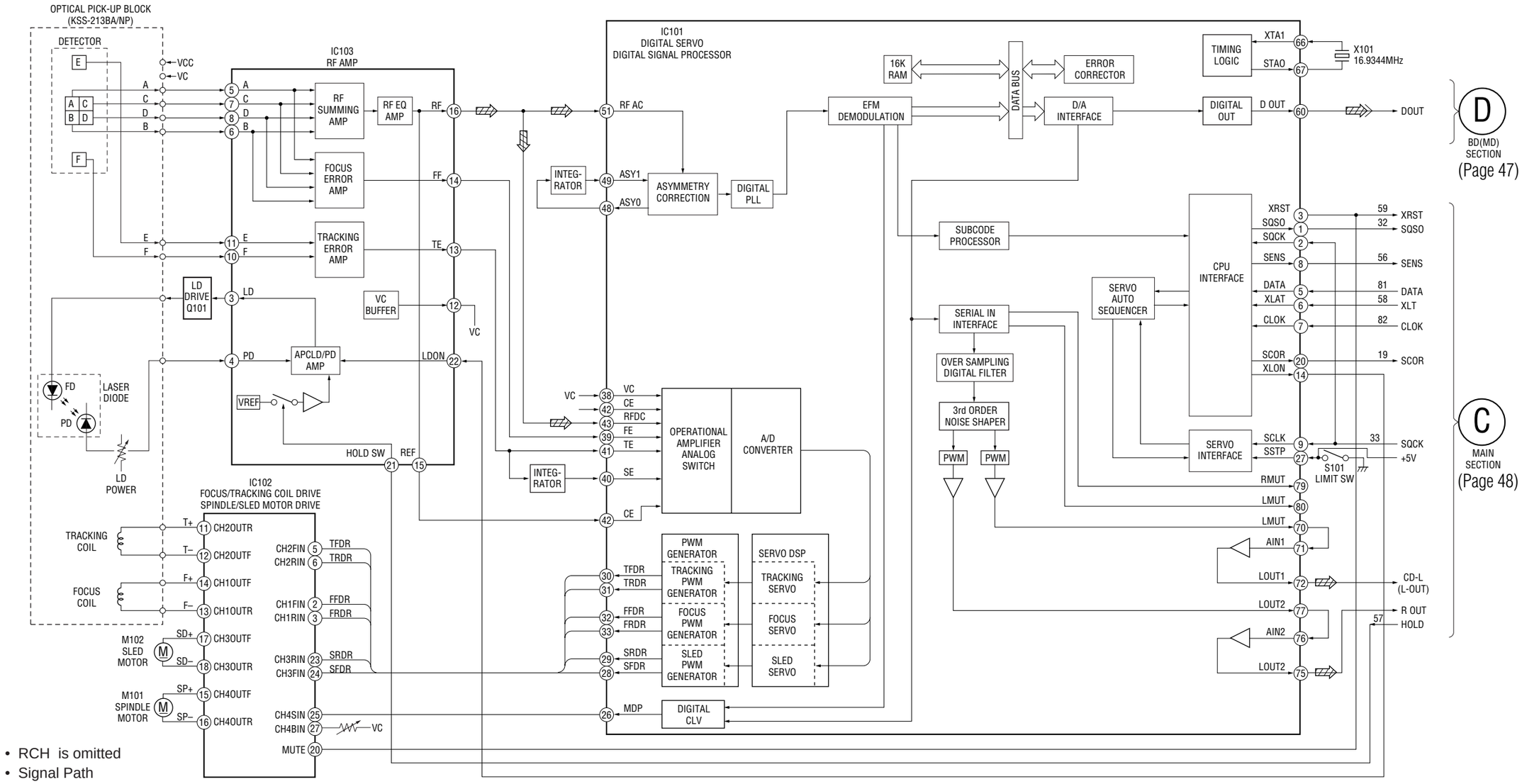
3. Confirm playback the signal recorded in step 1 become adjustment level as follows.
4. If these levels do not adjustment level, adjust the RV401 (L-CH) and RV451 (R-CH), on the MAIN board to repeat steps 1 to 3.
   Adjustment level:
   LINE OUT level: –23.8 dB ± 0.5 dB (47.2 to 53.0 mV)

Adjustment Location: TC board



SECTION 6
DIAGRAMS

6-1. BLOCK DIAGRAMS
– BD (CD) SECTION –



- RCH is omitted
- Signal Path
  - : CD
  - : CD (DIGITAL OUT)

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– BD (MD) SECTION (1/2) –

- RCH is omitted
- Signal Path
  - : PB
  - : REC
  - : PB (DIGITAL OUT)
  - : REC (DIGITAL IN)

OVER WRITE HEAD DRIVE IC181

HR901 OVER WRITE HEAD

HEAD DRIVE Q181,182

DIGITAL SERVO SIGNAL PROCESSOR, DIGITAL SIGNAL PROCESSOR EFM/ACIRC ENCODER/DECODER, SHOCK-PROOF MEMORY CONTROLLER, ATRAC ENCODER/DECODER IC121

OPTICAL PICK-UP BLOCK (KMS-260B/J1N)

DETECTOR

RF AMP IC101

RF AMP

RF AGC & EQ

BPF

P-P

PEAK & BOTTOM

ABCD AMP

FOCUS ERROR AMP

AT AMP

TRACKING ERROR AMP

IV AMP

IV AMP

E-F BALANCE

CVB

TEMP AMP

LASER ON SW Q101

APC Q162,163

VICONV

SERIAL PARALLEL DECODER

FILTER

PLL

EFM, ACIRC, ENCODER/ DECODER

SHOCK RESISTANT MEMORY CONTROLLER

ATRAC ENCODER/ DECODER

DIGITAL AUDIO I/F

SAMPLING RATE CONVERTER

CLOCK GENERATOR

BUFFER IC123

SUBCODE PROCESSOR

MONITOR CONTROL

CPU I/F

AUTO SEQUENCER

ANALOG MUX

A/D CONVERTER

APC

SERVO DSP

ADIP DEMODULATOR/ DECODER

SPINDLE SERVO

PWM GENERATOR

DRAM IC124

HF MODULE

HF MODULE SW IC103,Q102-104

SLED/SPINDLE MOTOR DRIVE FOCUS/TRACKING COIL DRIVE IC152

DRIVER

TRACKING COIL

FOCUS COIL

M902 SLED MOTOR

M901 SPINDLE MOTOR

EEP ROM IC171

DETECT SW S101, S102, S601-602, 604

M903 LOADING MOTOR

DIN0 DIN1 ADDT SCTX XINT DADT DOUT (NON CONNECT) BCK LRCK 512FS SQSY DQSY MNT3 MNT2 MNT1 MNT0 SENS SRDT SCLK SWDT XLAT CH

XWE XRAS XCAS XOE DQ1 DQ4 A0 A9

LDON WRPWR MOD SDA SCL LIMIT-IN REFLECT PROTECT CHACK IN SW PACK OUT SW PLAY-P SW REC P SW LOAD-IN LOAD-OUT DIG-RST

A BD (MD) SECTION (2/2) (Page 47)

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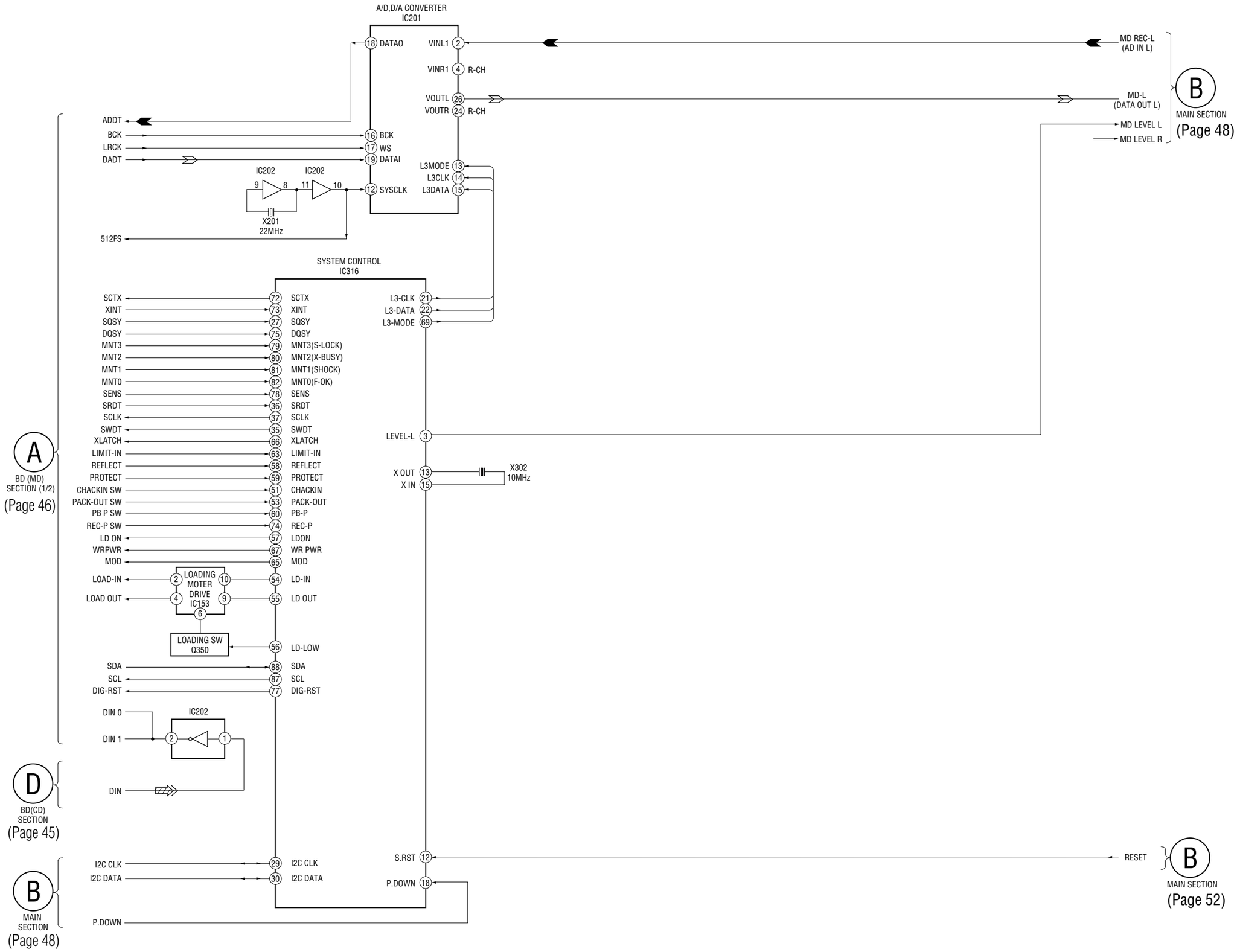
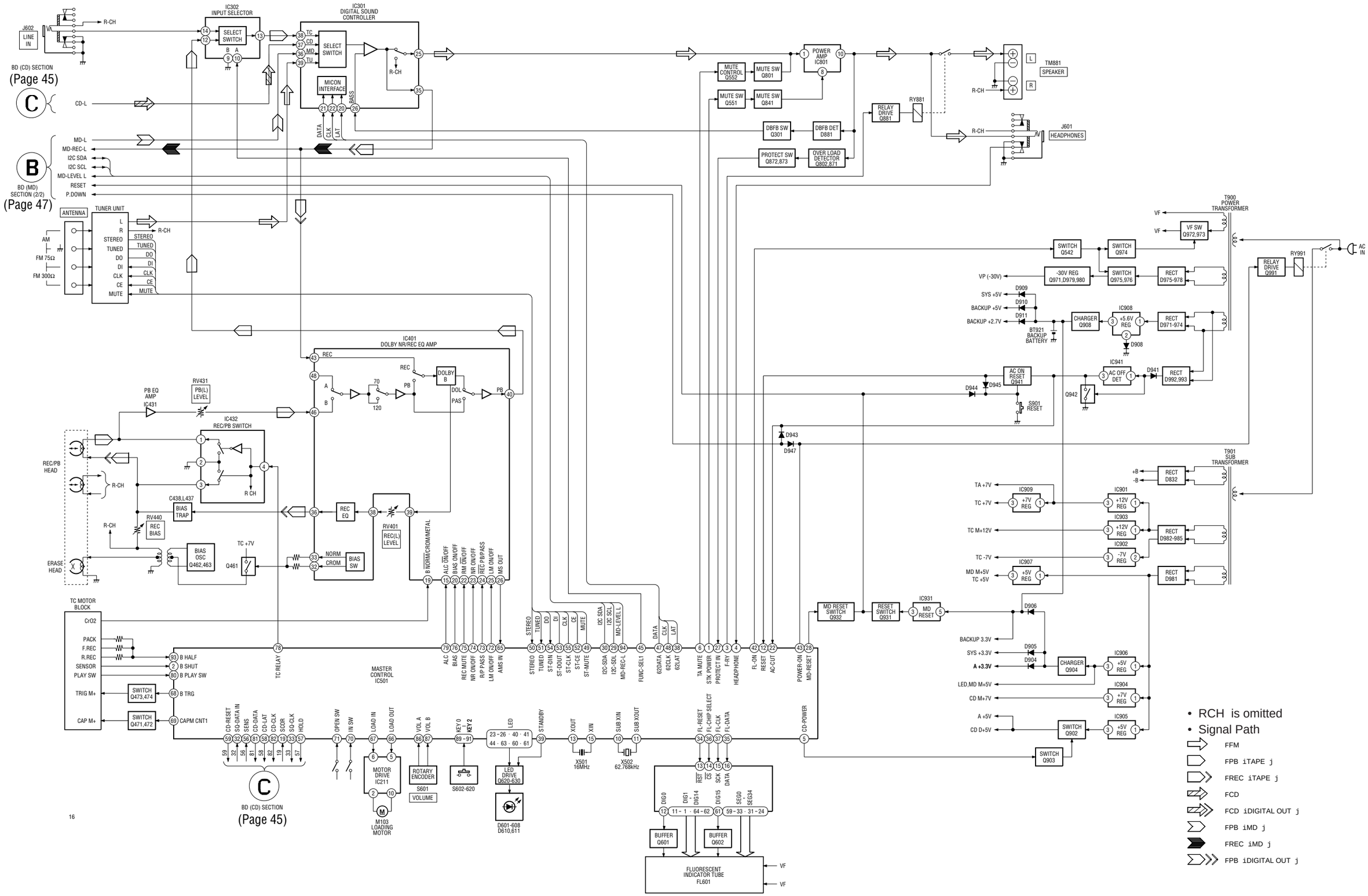
– BD (MD) SECTION (2/2) –

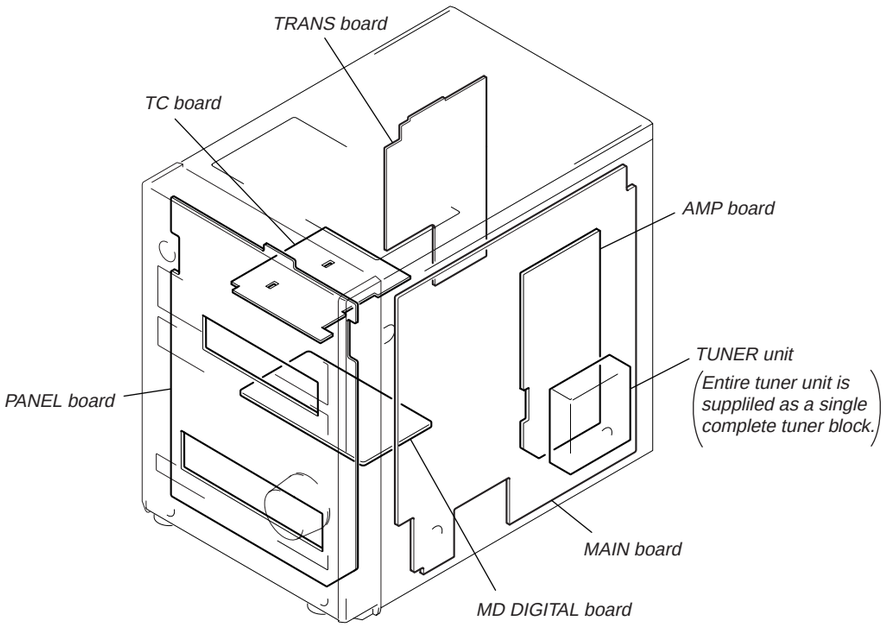


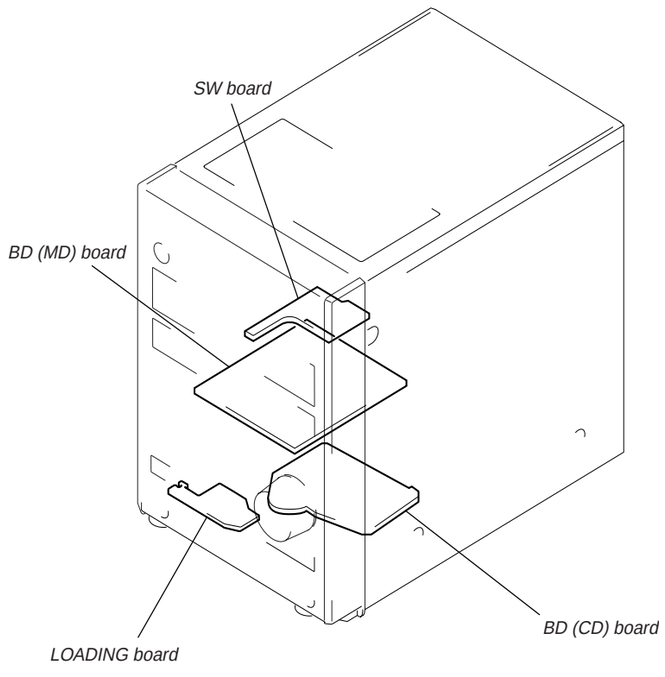
HCD-J3MD

– MAIN SECTION –



6-2. CIRCUIT BOARDS LOCATION





THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

Note on Schematic Diagram:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.
- B + : B+ Line.
- B – : B– Line.
- ▬ : adjustment for repair.

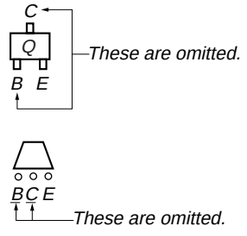
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	以阴影和 ⚠ 标志来识别的零部件，在安全方面具有关键性．因此只能以规定号码的零部件来更换．

- Voltages and waveforms are dc with respect to ground in service mode.
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- no mark : STOP
  ( ) : PLAY
  < > : REC
  ✻ : can not be measured.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : FM
  ⇨ : PB (TAPE)
  ⇨ : REC (TAPE)
  ⇨ : CD
  ⇨ : CD (digital out)
  ⇨ : PB (MD)
  ⇨ : REC (MD)
  ⇨ : PB (digital out)
  ⇨ : REC (digital in)

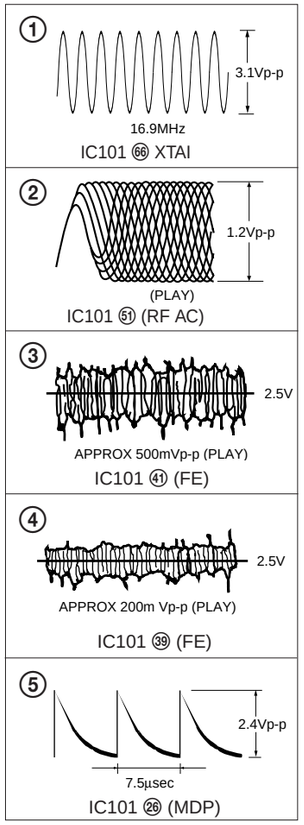
Note on Printed Wiring Board:

- ○——— : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- ○ : Through hole.
- ▒ : Pattern from the side which enables seeing.

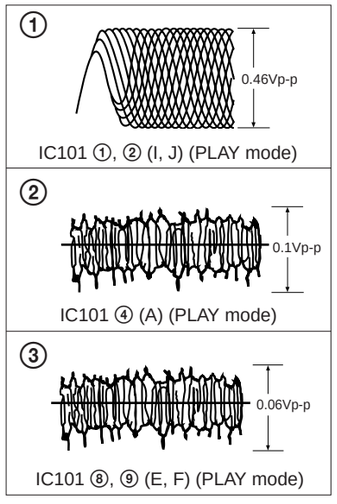
- **Indication of transistor**



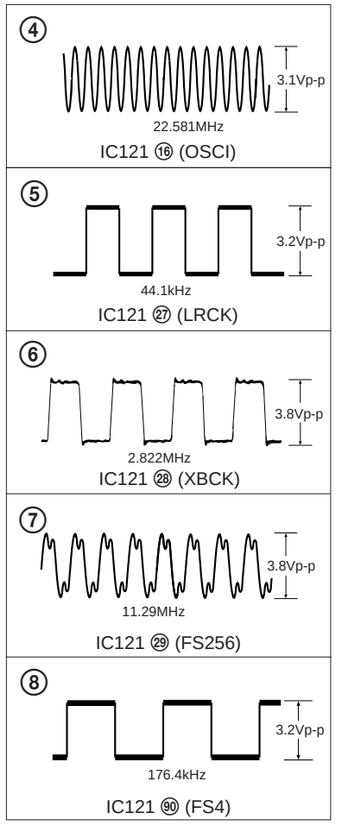
Waveforms
– BD (CD) SECTION –


① 3.1Vp-p 16.9MHz IC101 ㊻ XTAI
② 1.2Vp-p (PLAY) IC101 ㊶ (RF AC)
③ 2.5V APPROX 500mVp-p (PLAY) IC101 ㊶ (FE)
④ 2.5V APPROX 200m Vp-p (PLAY) IC101 ㊴ (FE)
⑤ 2.4Vp-p 7.5µsec IC101 ㉖ (MDP)

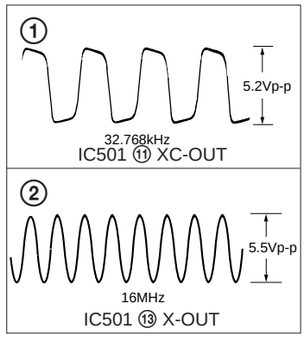
– BD (MD) (1/2) SECTION –



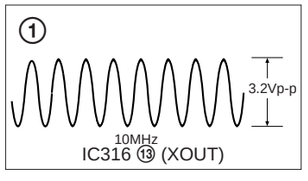
– BD (MD) (2/2) SECTION –


④ 3.1Vp-p 22.581MHz IC121 ⑯ (OSCI)
⑤ 3.2Vp-p 44.1kHz IC121 ㉗ (LRCK)
⑥ 3.8Vp-p 2.822MHz IC121 ㉘ (XBCK)
⑦ 3.8Vp-p 11.29MHz IC121 ㉙ (FS256)
⑧ 3.2Vp-p 176.4kHz IC121 ㉚ (FS4)

– MAIN (3/3) Section –

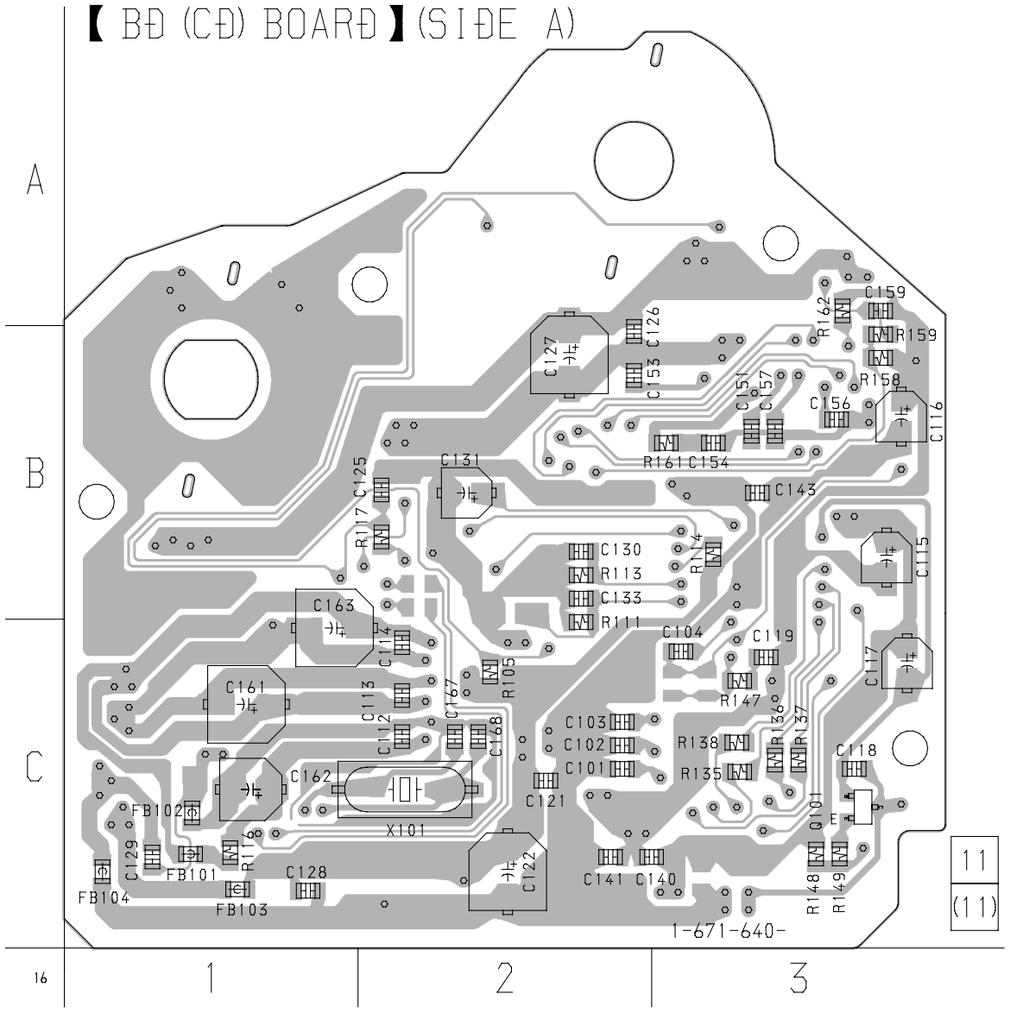


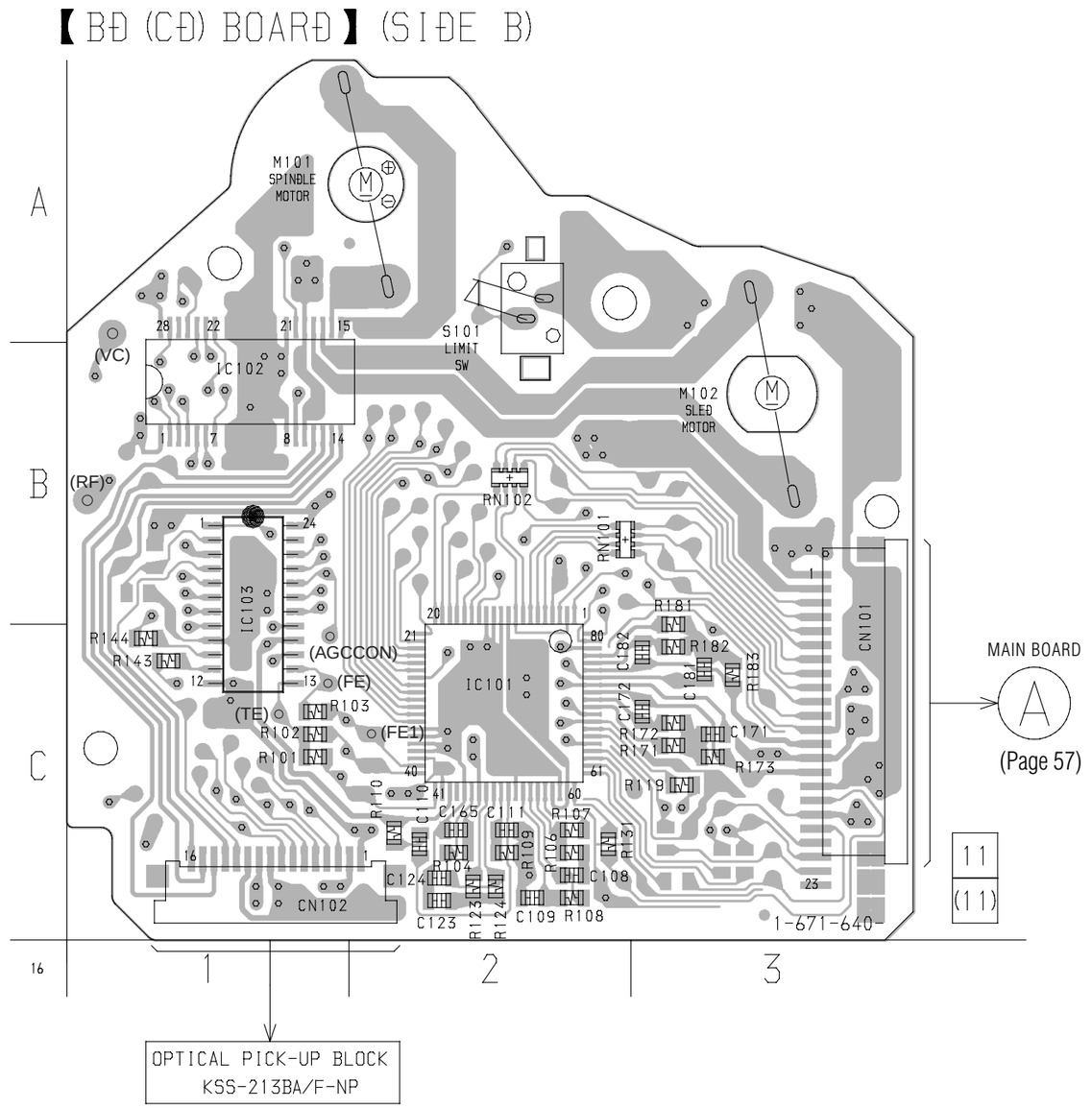
– MD DIGITAL Section –



6-3. Printed Wiring Board – BD (CD) Section –

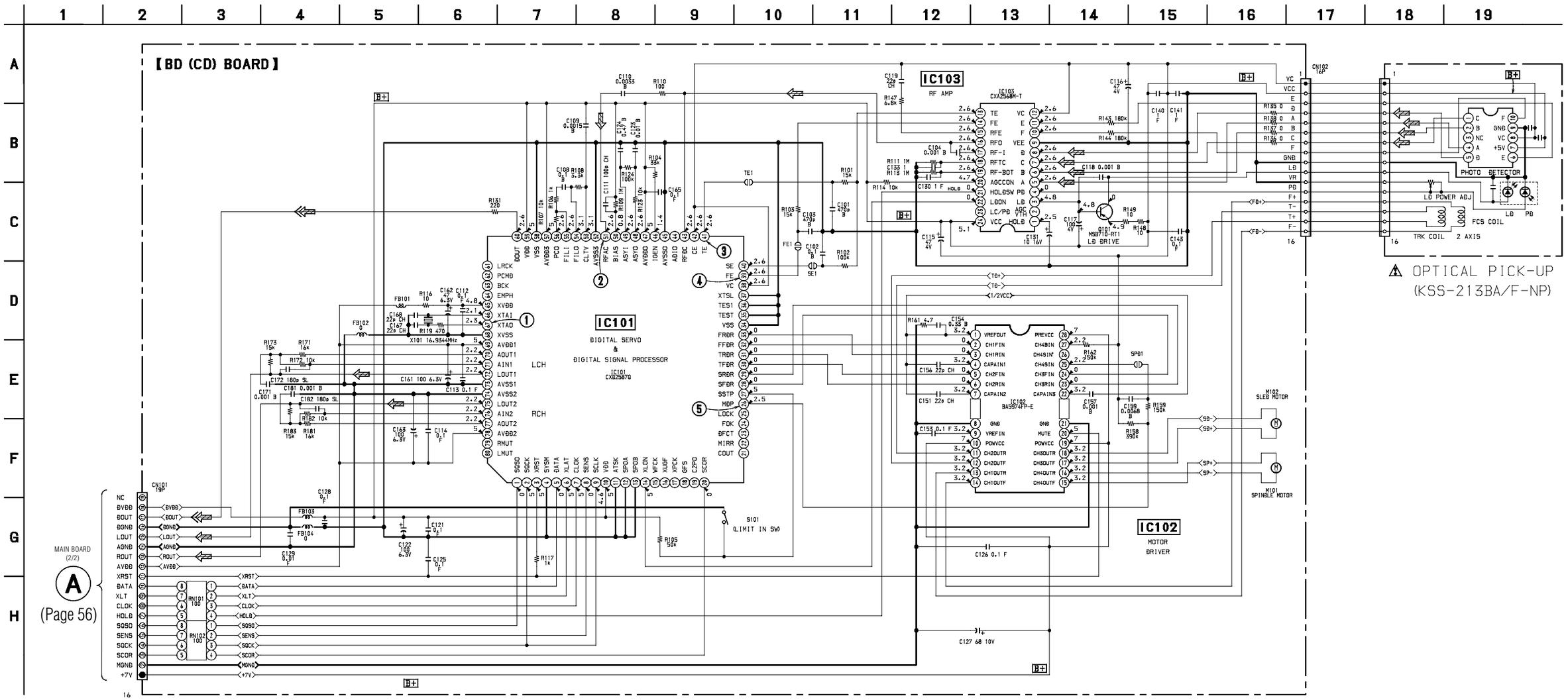
• See page 49 for Circuit Boards Location.





6-4. Schematic Diagram – BD (CD) Section –

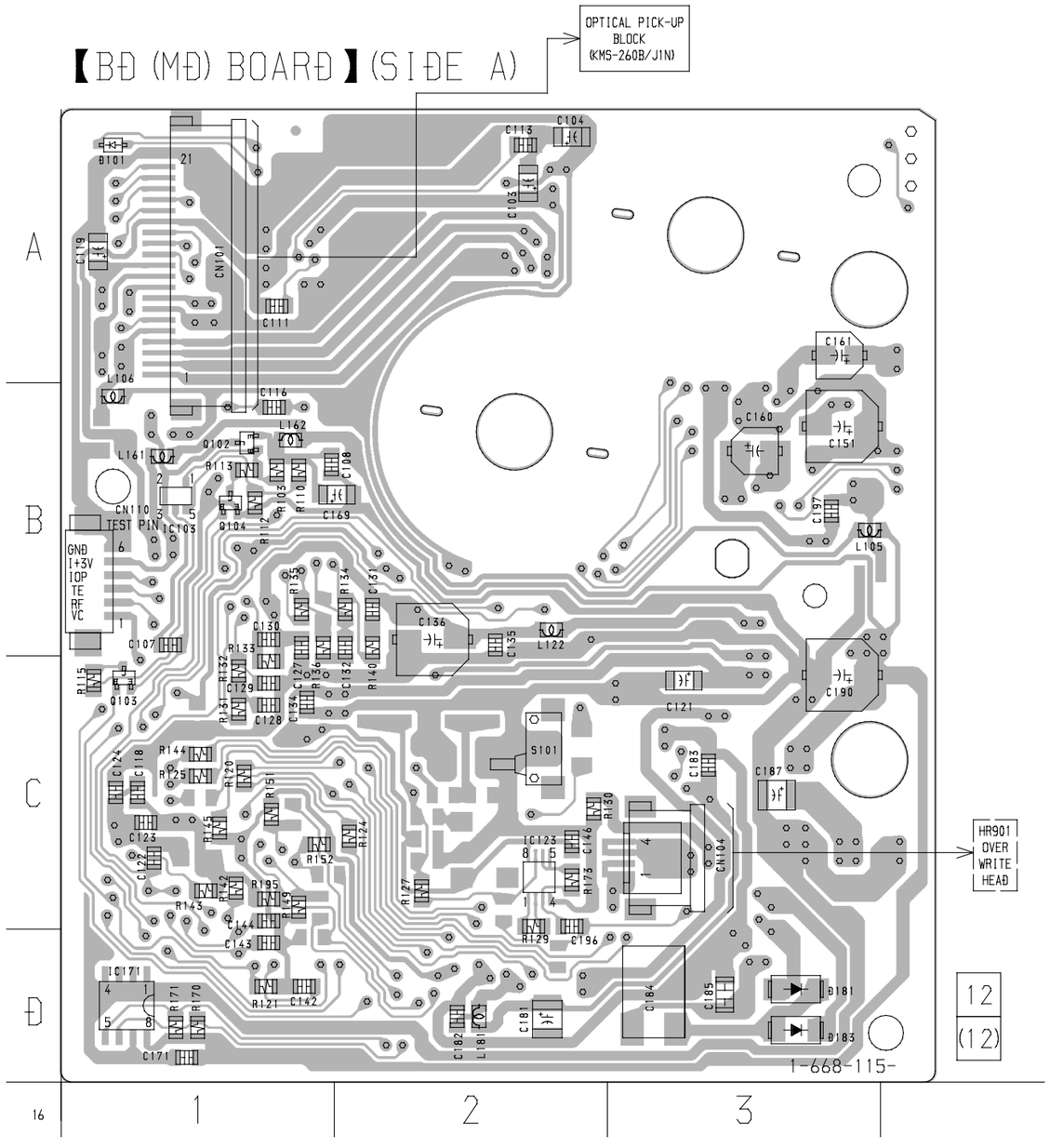
• See page 49 for Waveforms. • See page 71 for IC Block Diagrams. • See page 75 for IC Pin Functions.

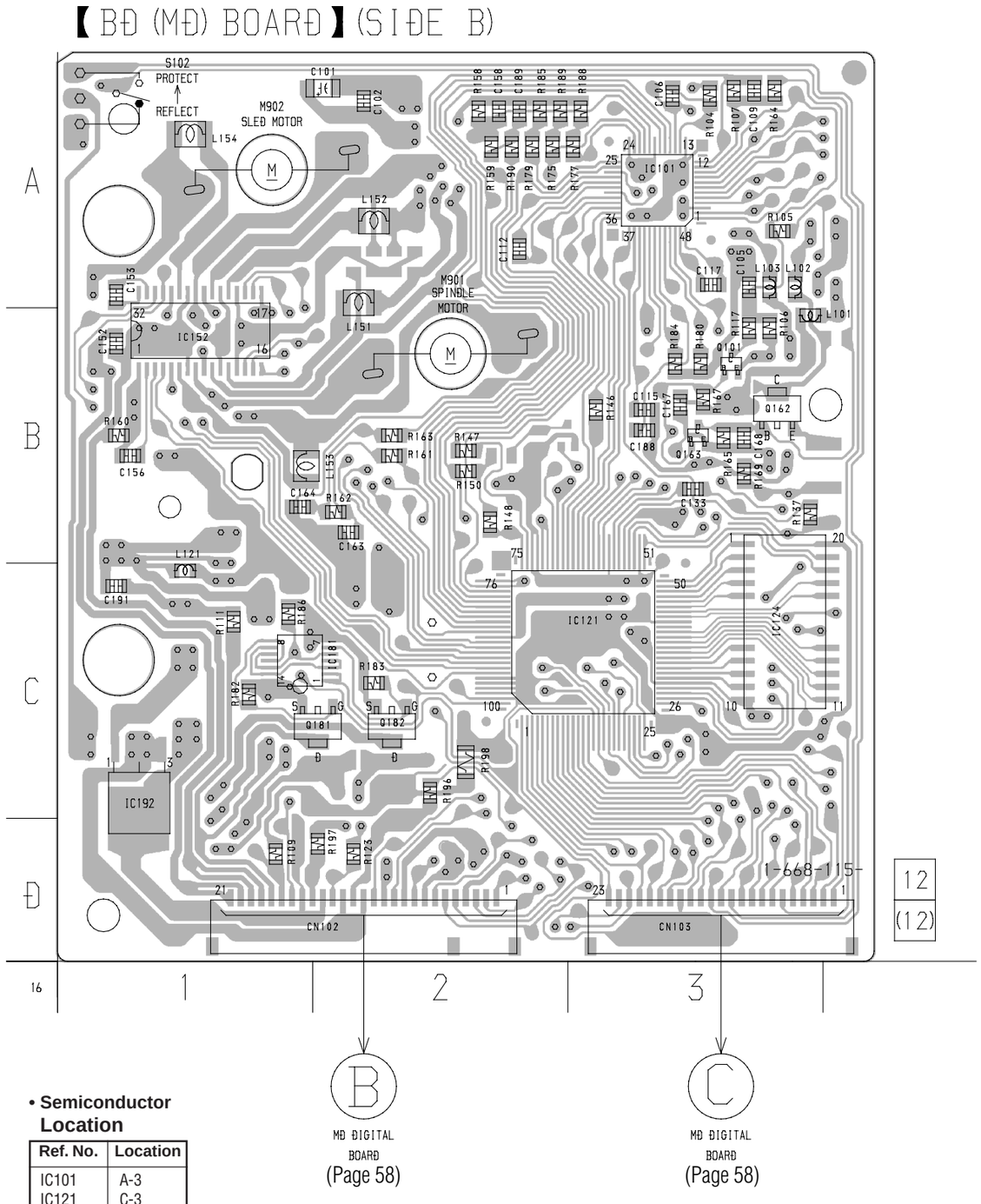


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	以阴影和 ⚠ 标志来识别的零部件，在安全方面具有关键性，因此只能以规定号码的零部件来更换。

6-5. Printed Wiring Board – BD (MD) Section –

• See page 49 for Circuit Boards Location.





• **Semiconductor Location**

Ref. No.	Location
D101	A-1
D181	D-3
D183	D-3
IC103	B-1
IC123	C-2
IC171	D-1
Q102	B-1
Q103	C-1
Q104	B-1

• **Semiconductor Location**

Ref. No.	Location
IC101	A-3
IC121	C-3
IC124	C-3
IC152	B-1
IC181	C-2
IC192	C-1
Q101	B-3
Q162	B-3
Q163	B-3
Q181	C-2
Q182	C-2

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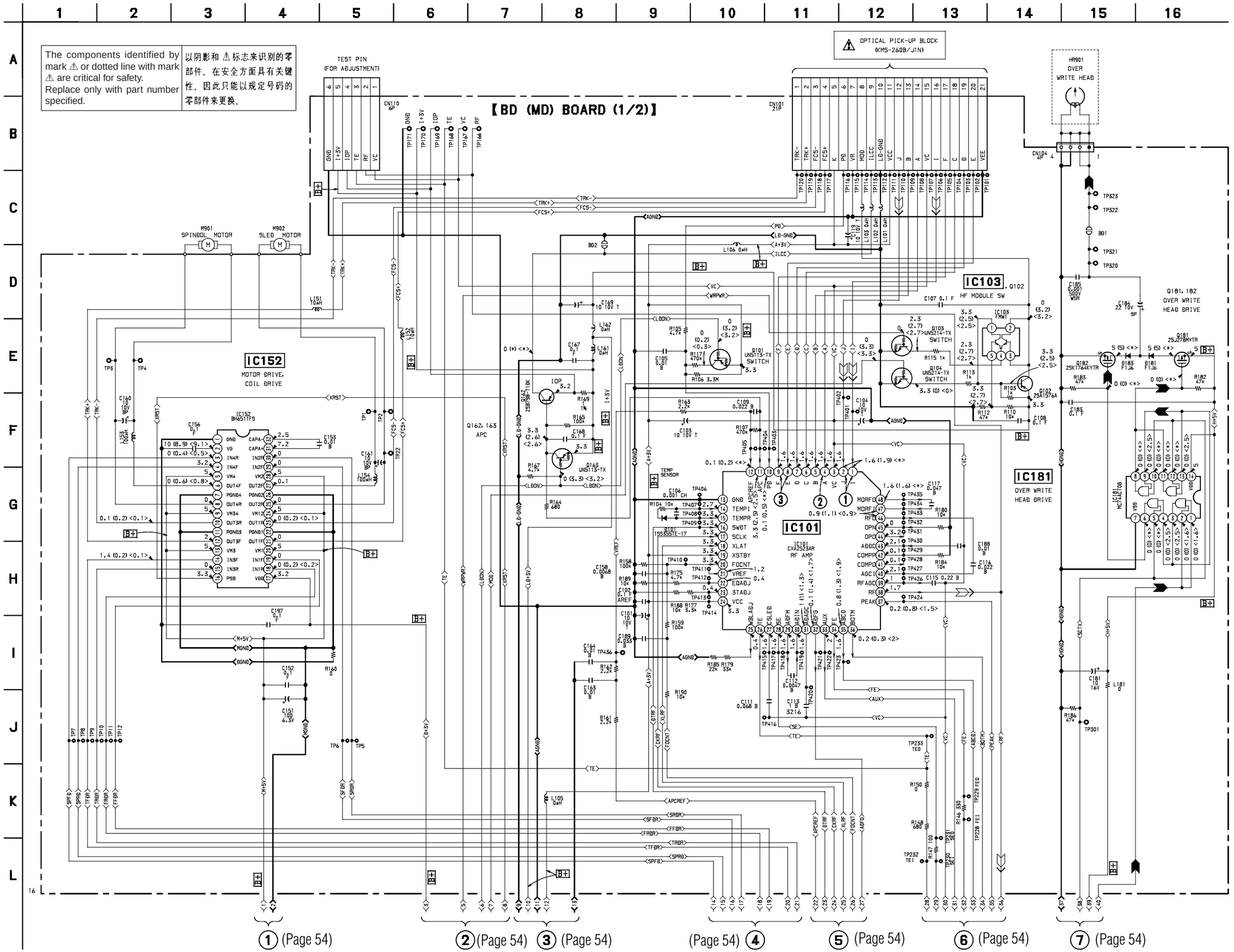
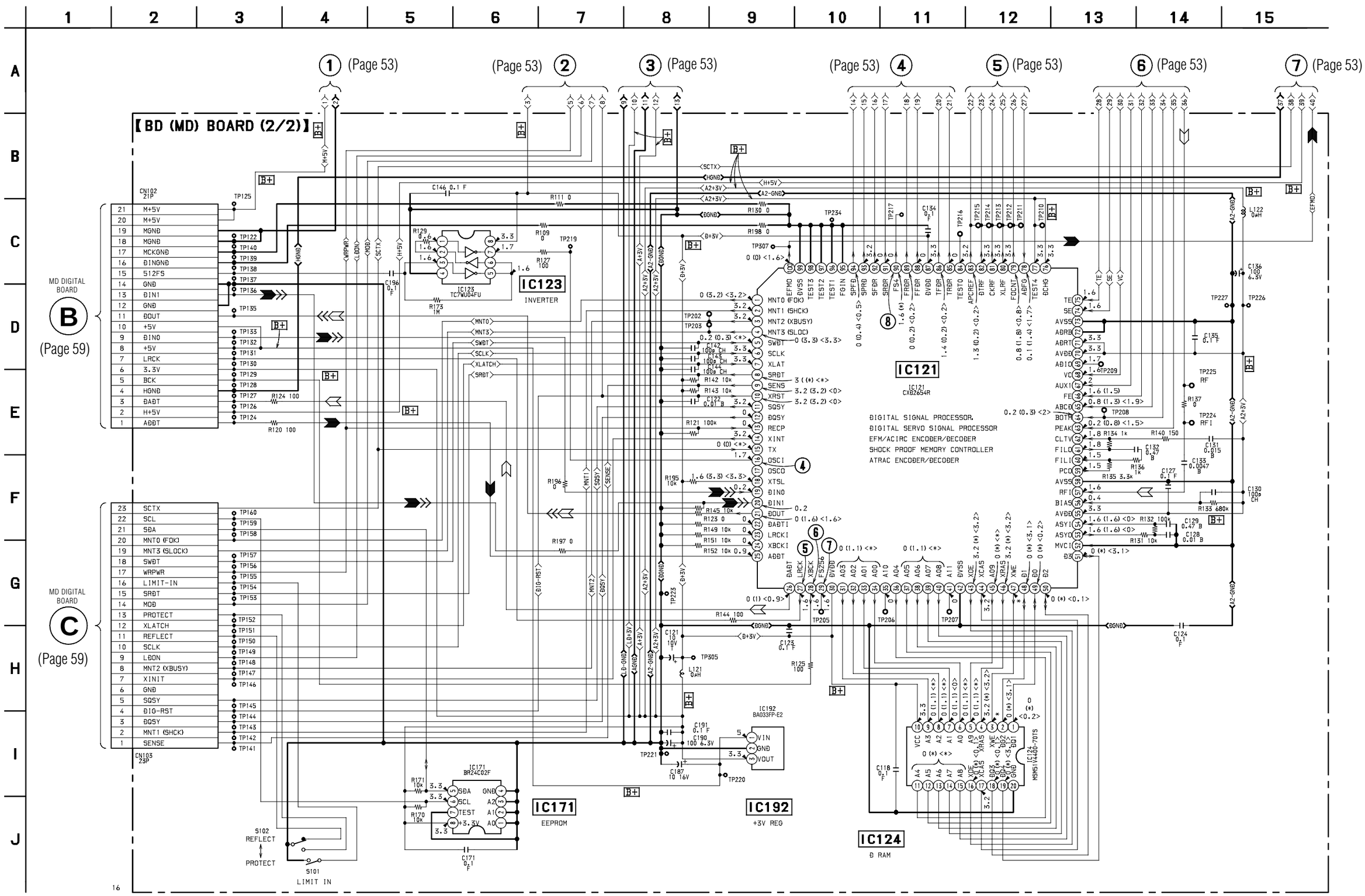
6-6. Schematic Diagram – BD (MD) Section (1/2) –

• See page 49 for Waveforms. • See page 69 for IC Block Diagrams. • See page 74 for IC Pin Functions.



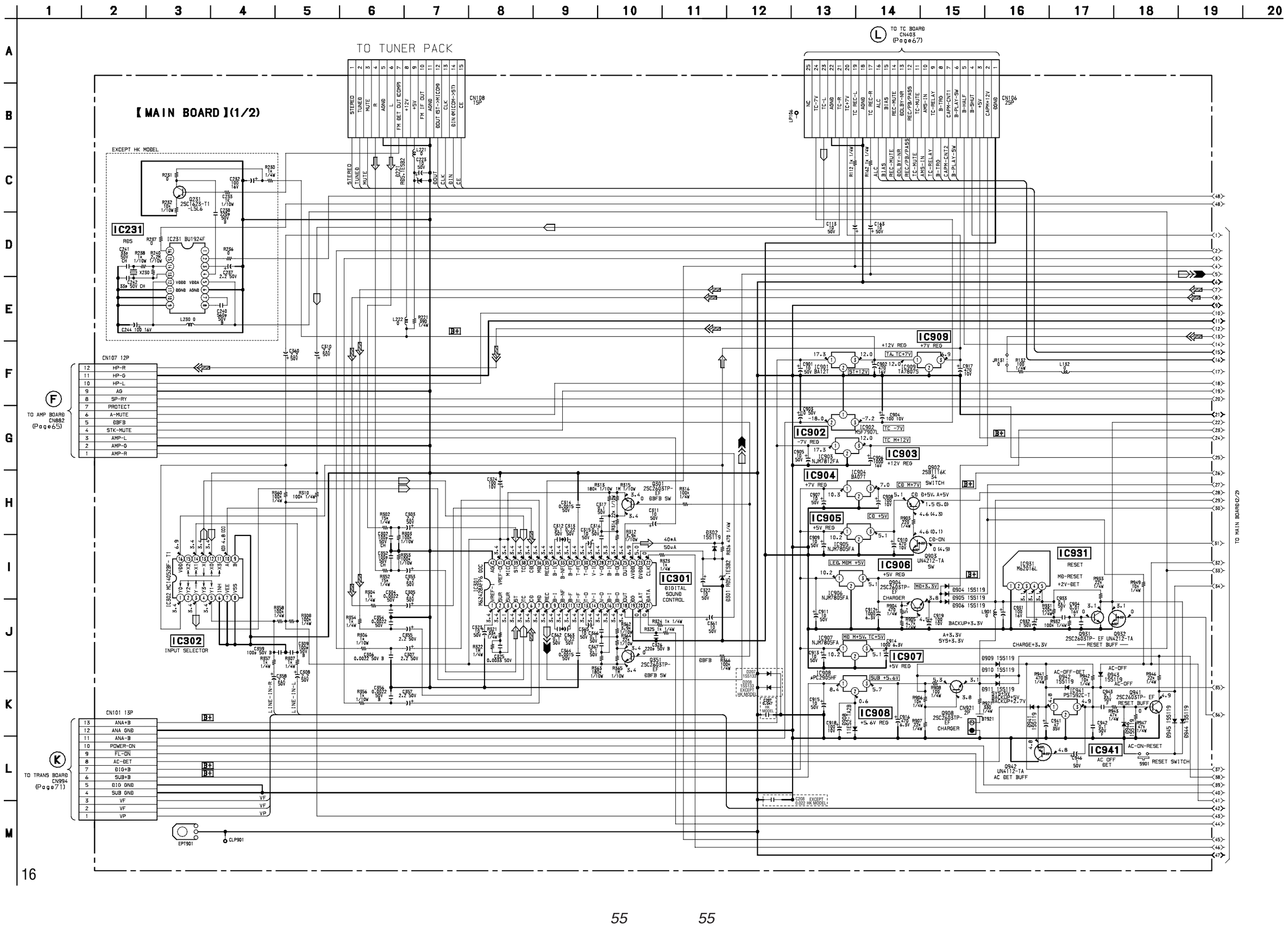
6-7. Schematic Diagram – BD (MD) Section (2/2) –

• See page 49 for Waveforms. • See page 52 for Printed Wiring Board. • See page 70 for IC Block Diagrams.



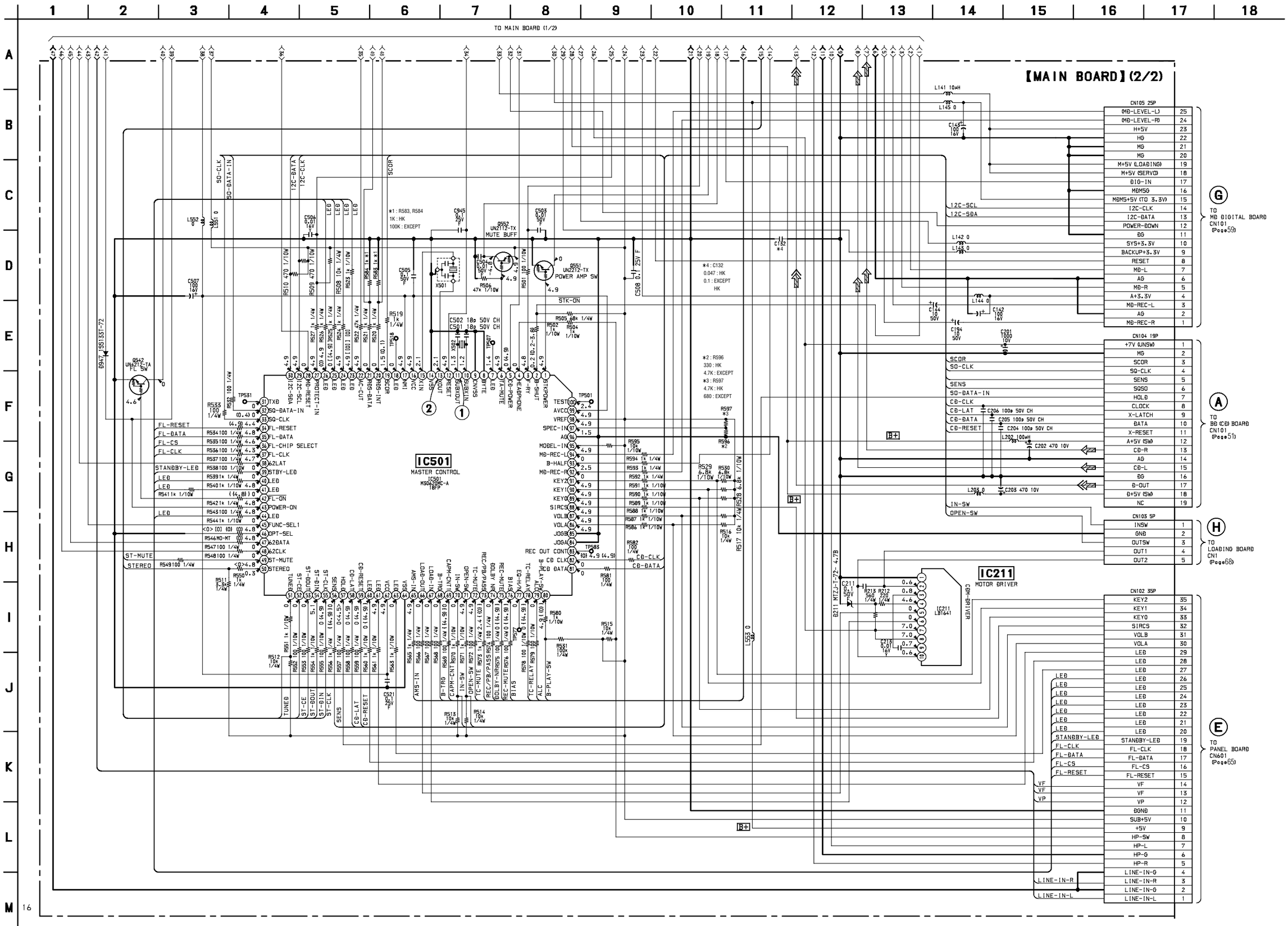
6-8. Schematic Diagram – MAIN Section (1/2) –

• See page 57 for Printed Wiring Board. • See page 72 for IC Block Diagrams.

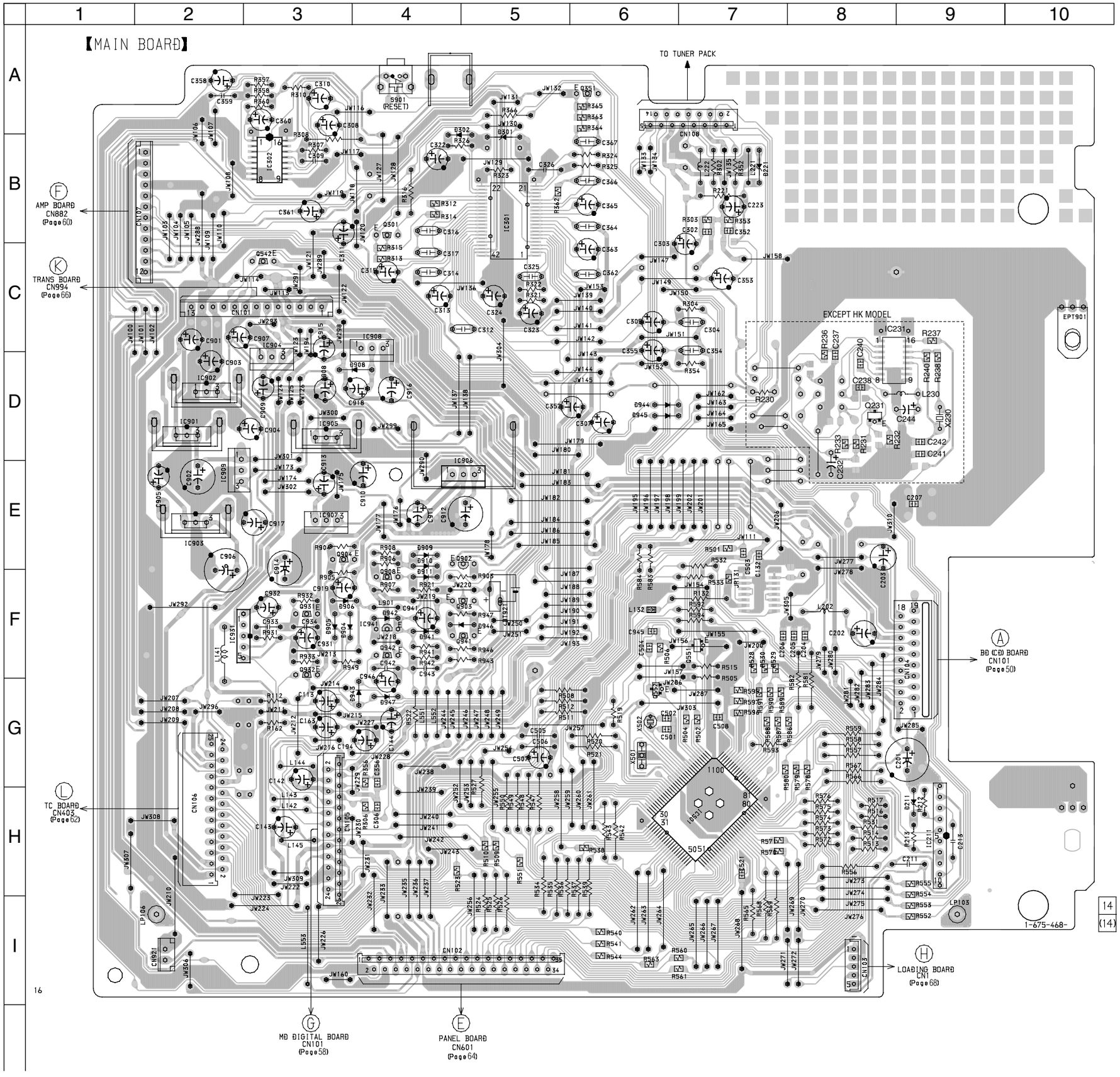


6-9. Schematic Diagram – MAIN Section (2/2) –

• See page 49 for Waveforms. • See page 73 for IC Block Diagrams. • See page 77 for IC Pin Functions.


【MAIN BOARD】(2/2)
TO MAIN BOARD (1/2)
IC501
MASTER CONTROL
IC211
MOTOR DRIVER
CN105 25P
CN104 19P
CN103 5P
CN102 35P
TO MB DIGITAL BOARD CN101 (Page59)
TO BB (CD) BOARD CN101 (Page51)
TO LOADING BOARD CN1 (Page68)
TO PANEL BOARD CN601 (Page65)
*1 : R583, R584 1K : HK 100K : EXCEPT
*2 : R596 330 : HK 4.7K : EXCEPT
*3 : R597 4.7K : HK 680 : EXCEPT
*4 : C132 0.047 : HK 0.1 : EXCEPT HK

6-10. Printed Wiring Board – MAIN Section – • See page 49 for Circuit Boards Location.

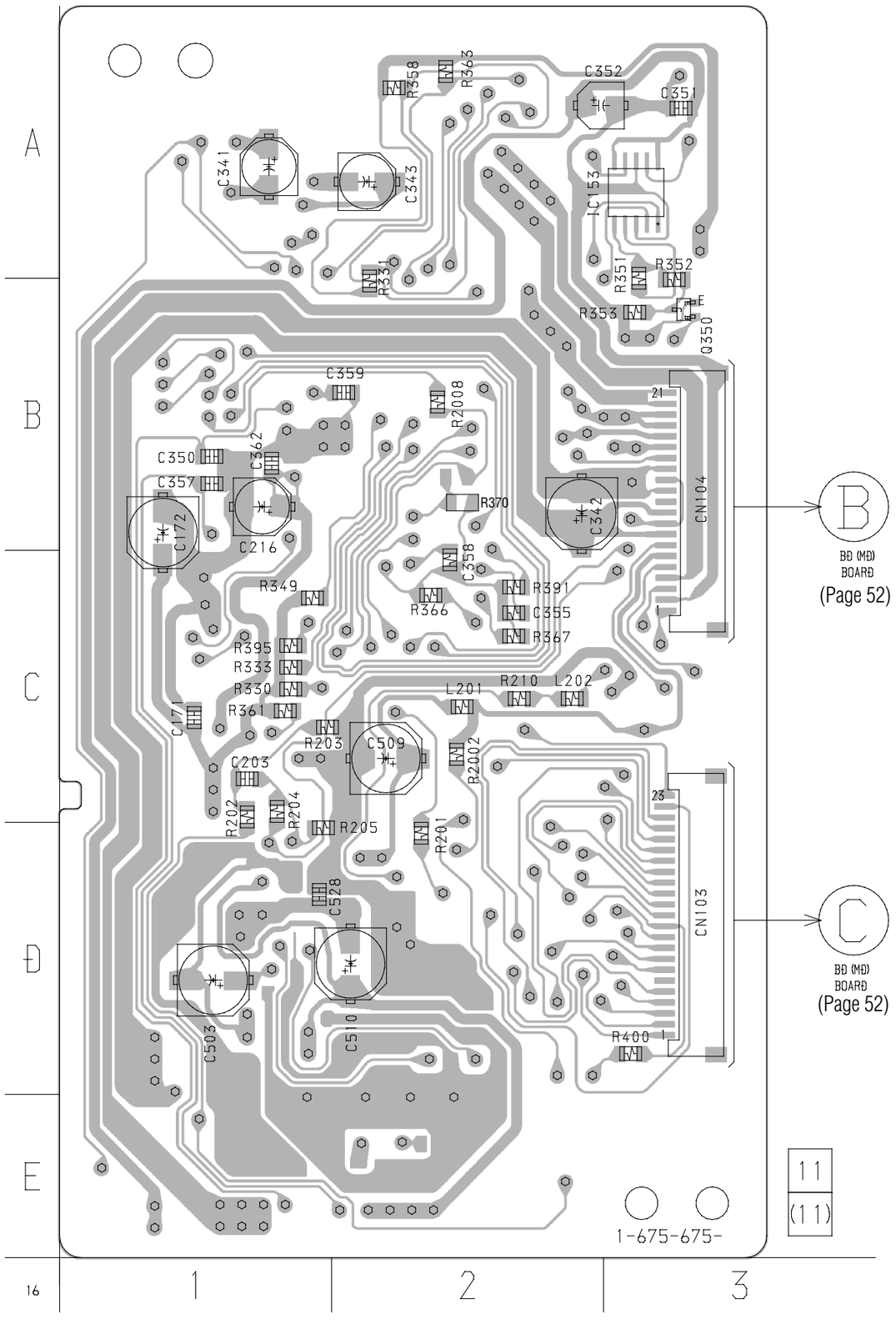


- **Semiconductor Location**

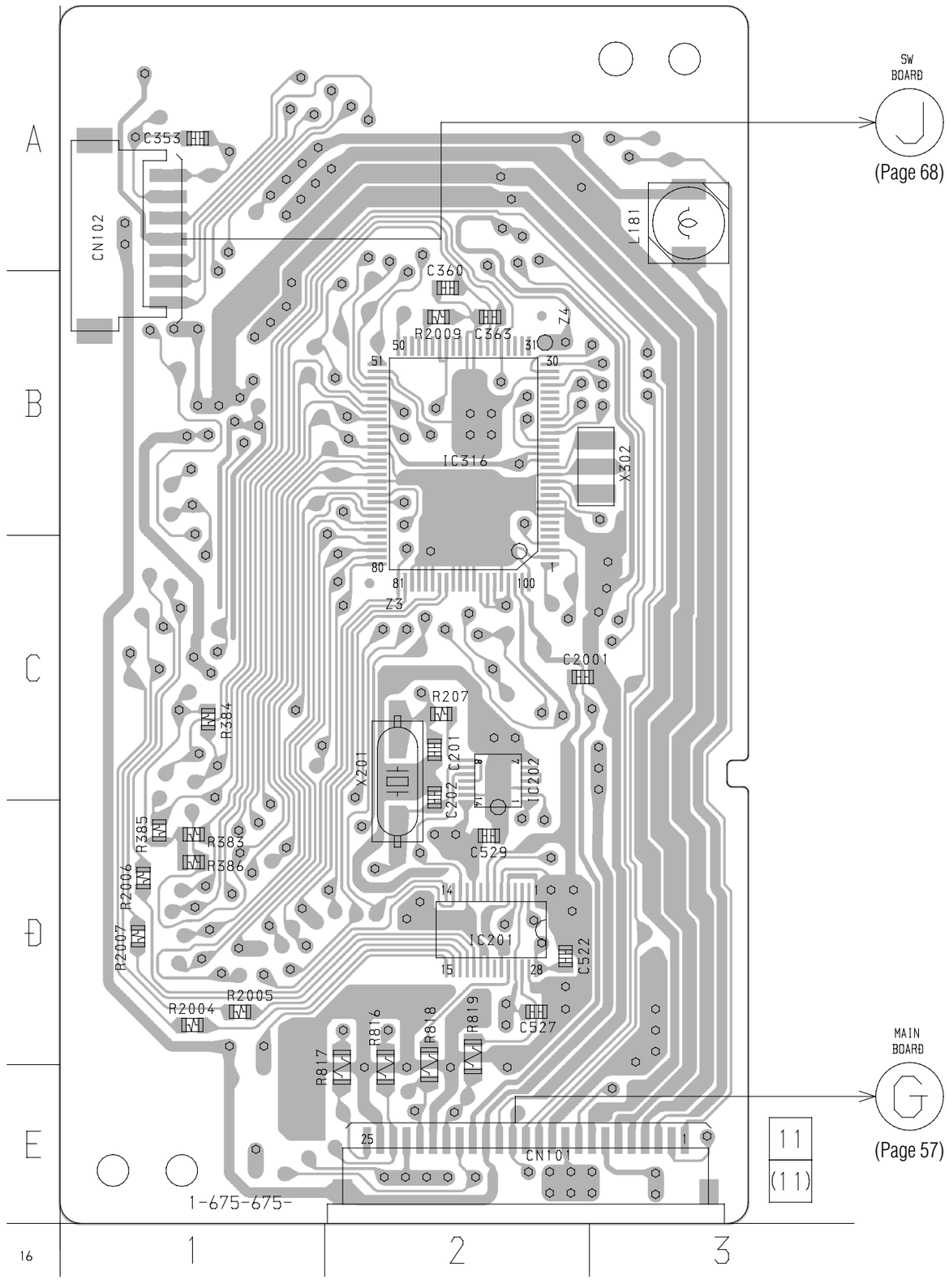
Ref. No.	Location
D211	H-9
D221	B-7
D301	B-5
D302	B-4
D904	F-3
D905	F-3
D906	F-4
D908	D-4
D909	E-4
D910	E-4
D911	F-4
D941	F-4
D942	F-4
D943	G-4
D944	D-6
D945	D-6
D946	F-5
D947	G-4
IC211	H-9
IC231	D-9
IC301	B-5
IC302	B-3
IC501	H-7
IC901	D-2
IC902	D-2
IC903	E-2
IC904	D-3
IC905	D-3
IC906	E-5
IC907	E-3
IC908	D-4
IC909	E-2
IC931	F-3
IC941	F-4
Q231	D-8
Q301	B-4
Q351	A-6
Q542	C-3
Q551	F-7
Q552	G-6
Q902	E-5
Q903	F-5
Q904	E-4
Q908	F-4
Q931	F-3
Q932	F-3
Q941	F-5
Q942	F-4

6-11. Printed Wiring Board – MD DIGITAL Section – • See page 49 for Circuit Boards Location.

【MD DIGITAL BOARD】(SIDE A)

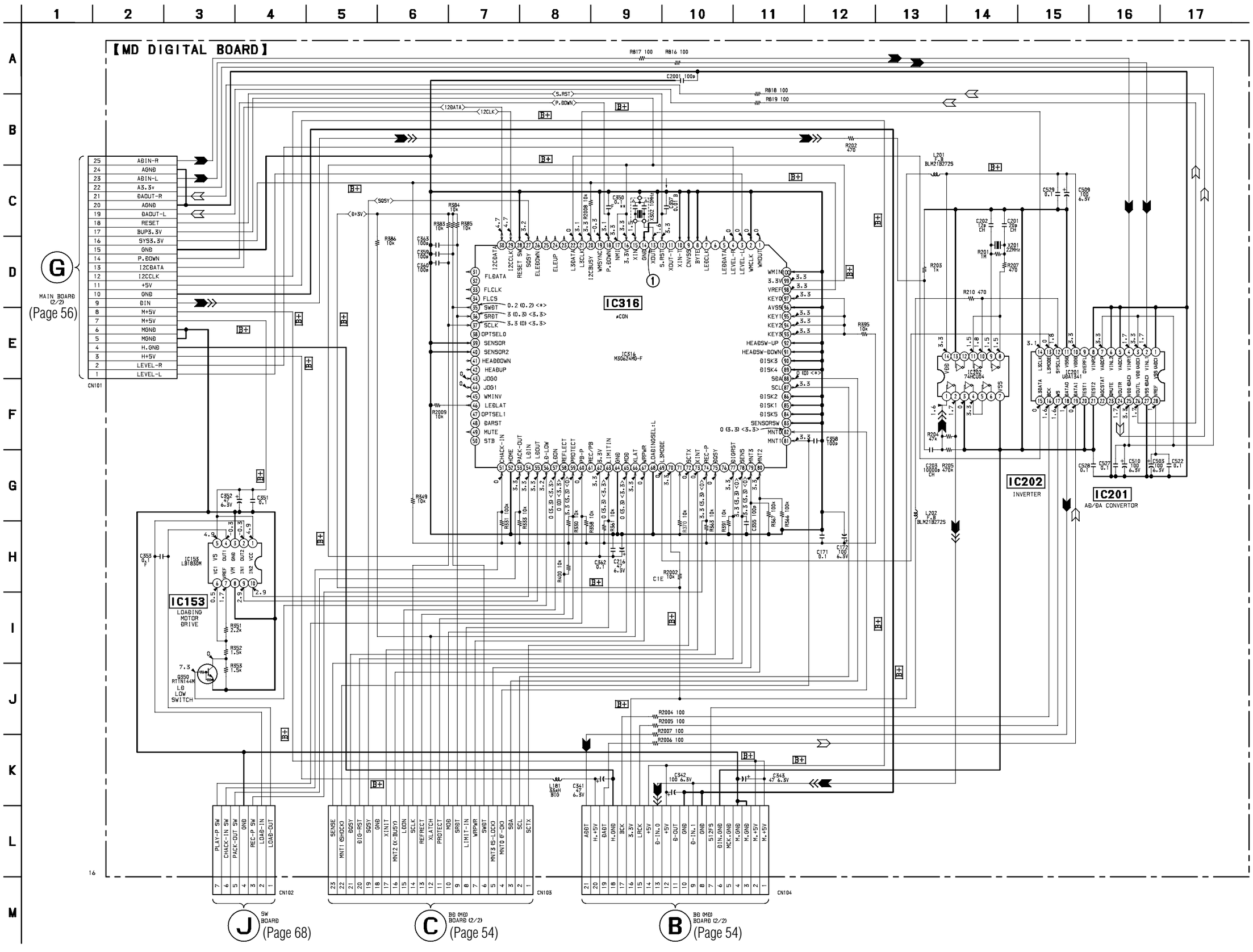


【MD DIGITAL BOARD】(SIDE B)



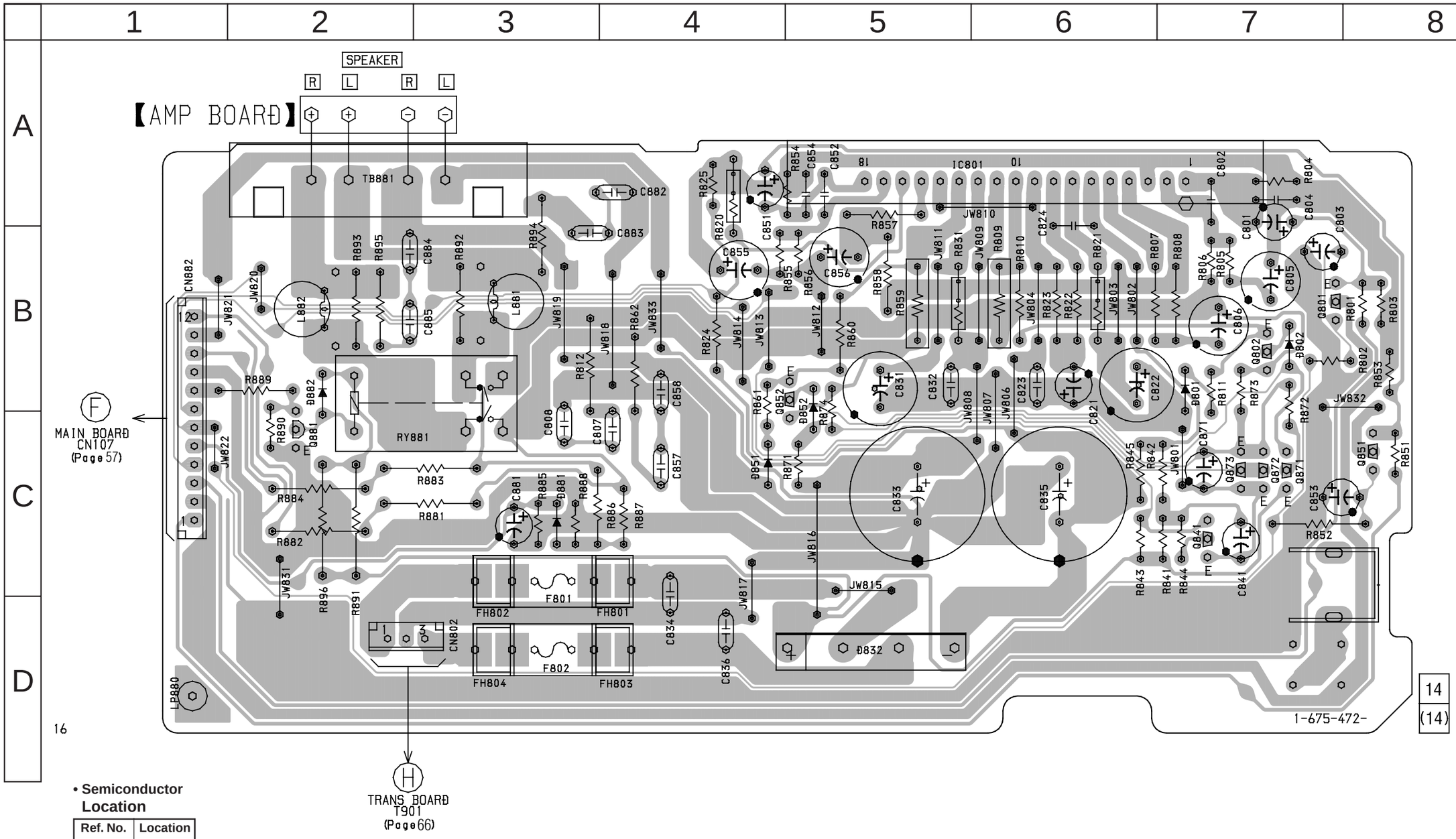
6-12. Printed Wiring Board – MD DIGITAL Section –

• See page 49 for Waveforms. • See page 71 for IC Block Diagrams.



6-13. Printed Wiring Board – AMP Section –

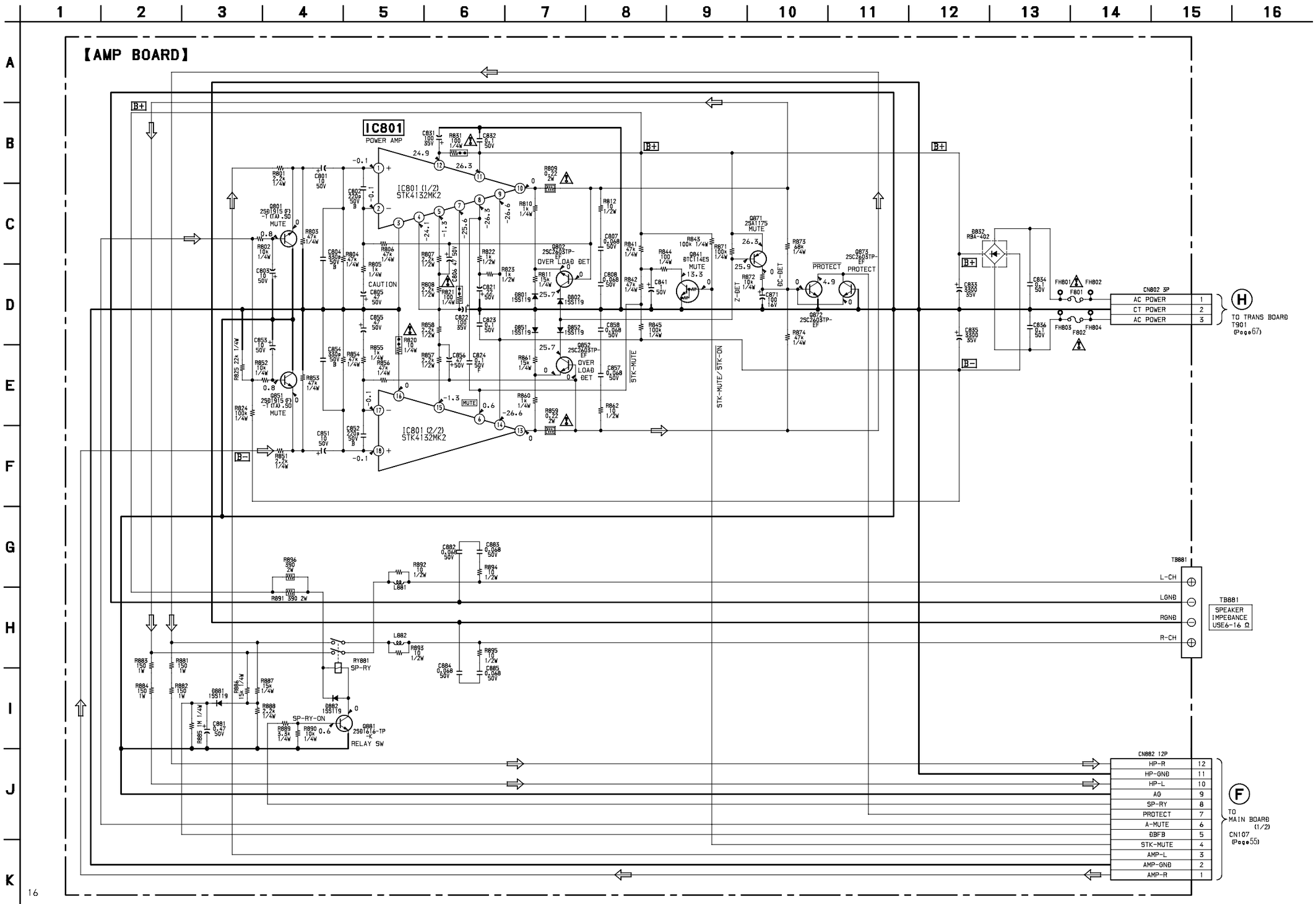
• See page 49 for Circuit Boards Location.



• Semiconductor Location

Ref. No.	Location
D801	B-7
D802	B-7
D832	D-5
D851	C-4
D852	B-5
D881	C-3
D882	B-2
IC801	A-5
Q801	B-7
Q802	B-7
Q841	C-7
Q851	C-8
Q852	B-5
Q871	C-7
Q872	C-7
Q873	C-7
Q881	C-2

6-14. Schematic Diagram – AMP Section –



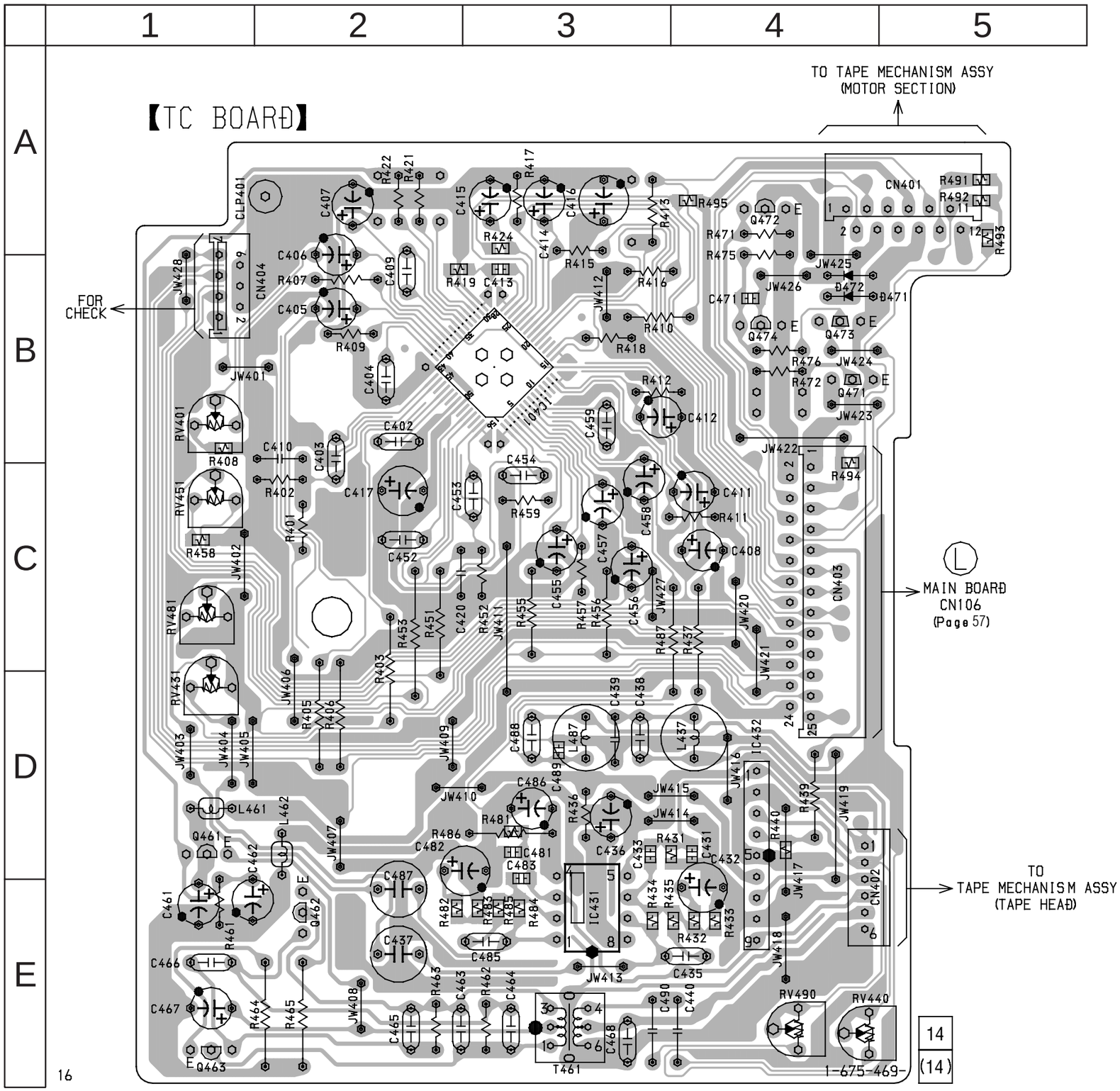
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	以阴影和 ⚠ 标志来识别的零部件，在安全方面具有关键性，因此只能以规定号码的零部件来更换。

6-15. Printed Wiring Board – CASSETTE DECK Section –

• See page 49 for Circuit Boards Location.

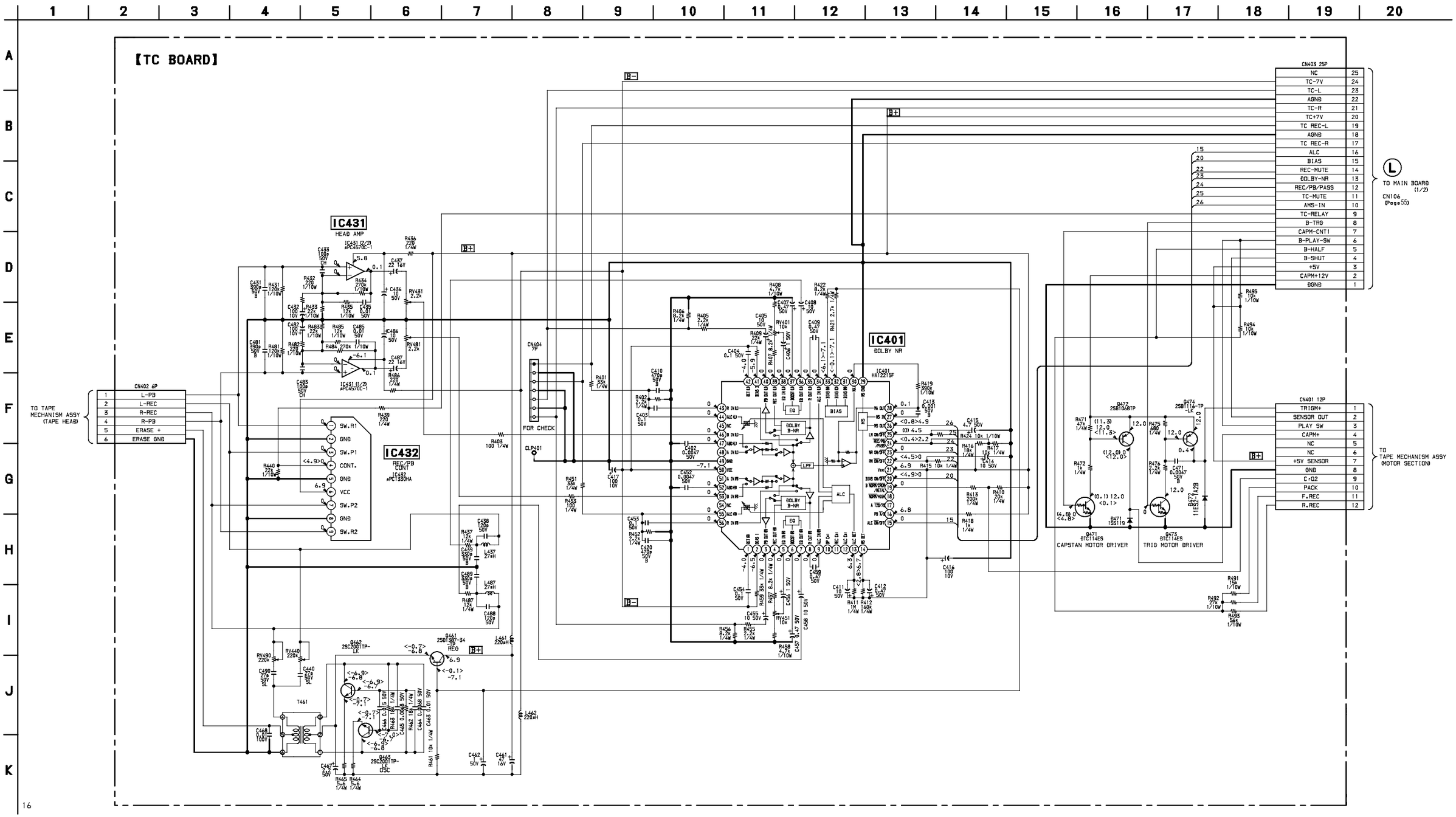
• Semiconductor Location

Ref. No.	Location
D471	B-4
D472	B-4
IC401	B-3
IC431	E-3
IC432	D-4
Q461	D-1
Q462	E-2
Q463	E-1
Q471	B-4
Q472	A-4
Q473	B-4
Q474	B-4



6-16. Printed Wiring Board – CASSETTE DECK Section –

• See page 73 for IC Block Diagrams.

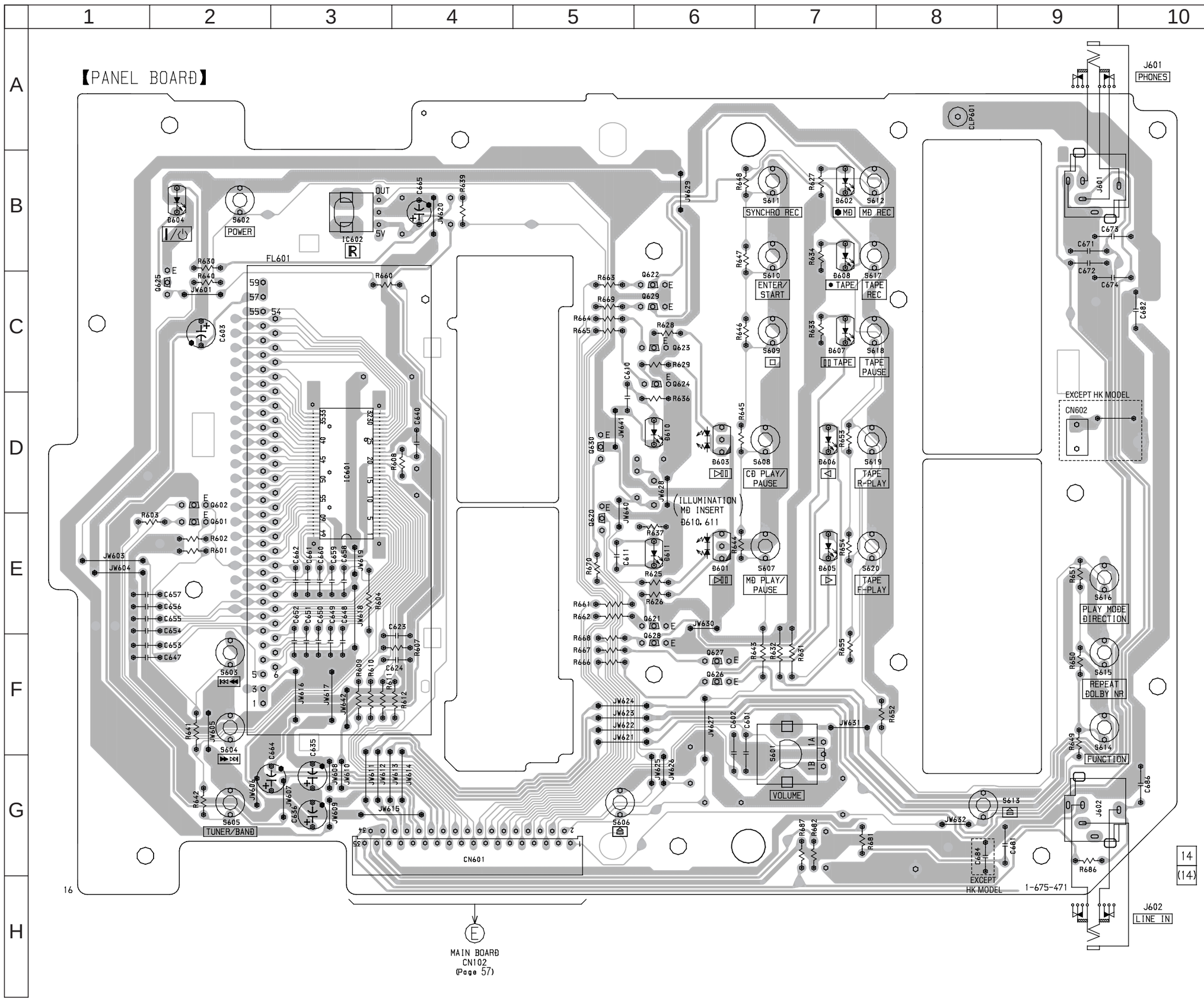


6-17. Printed Wiring Board – PANEL Section –

• See page to 49 for Circuit Boards Location.

• **Semiconductor Location**

Ref. No.	Location
D601	E-6
D602	B-7
D603	D-6
D604	B-2
D605	E-7
D606	D-7
D607	C-7
D608	B-7
D610	D-6
D611	E-6
IC601	D-3
IC602	B-3
Q601	E-2
Q602	D-2
Q620	D-5
Q621	E-6
Q622	C-6
Q623	C-6
Q624	C-6
Q625	C-2
Q626	F-6
Q627	F-6
Q628	F-6
Q629	C-6
Q630	D-5



6-18. Schematic Diagram – PANEL Section –

【PANEL BOARD】

FL601
FLUORESCENT
INDICATOR
TUBE

IC601
FLUORESCENT
INDICATOR
DRIVE

IC602
SIRCS

IC601
M66004M8FP

Q601, Q602
SWITCH

S601
VOLUME

J601
PHONES

J602
LINE IN

CN601
35P

CN602
EXCEPT
HK MODEL

C684
0.1
EXCEPT
HK MODEL

CLP601

TO MAIN BOARD (2/2)
CN102
(Page56)

KEY0
KEY1
KEY2

TUNING-
TUNING+
TUNER
BAND

MD
CD
ENTER/START
SYNCRO REC

FUNCTION
PLAY MODE
DIRECTION
TUNING MODE
TAPE

REPEAT
DOLBY NR
STEREO/ MONO

(STANDBY)

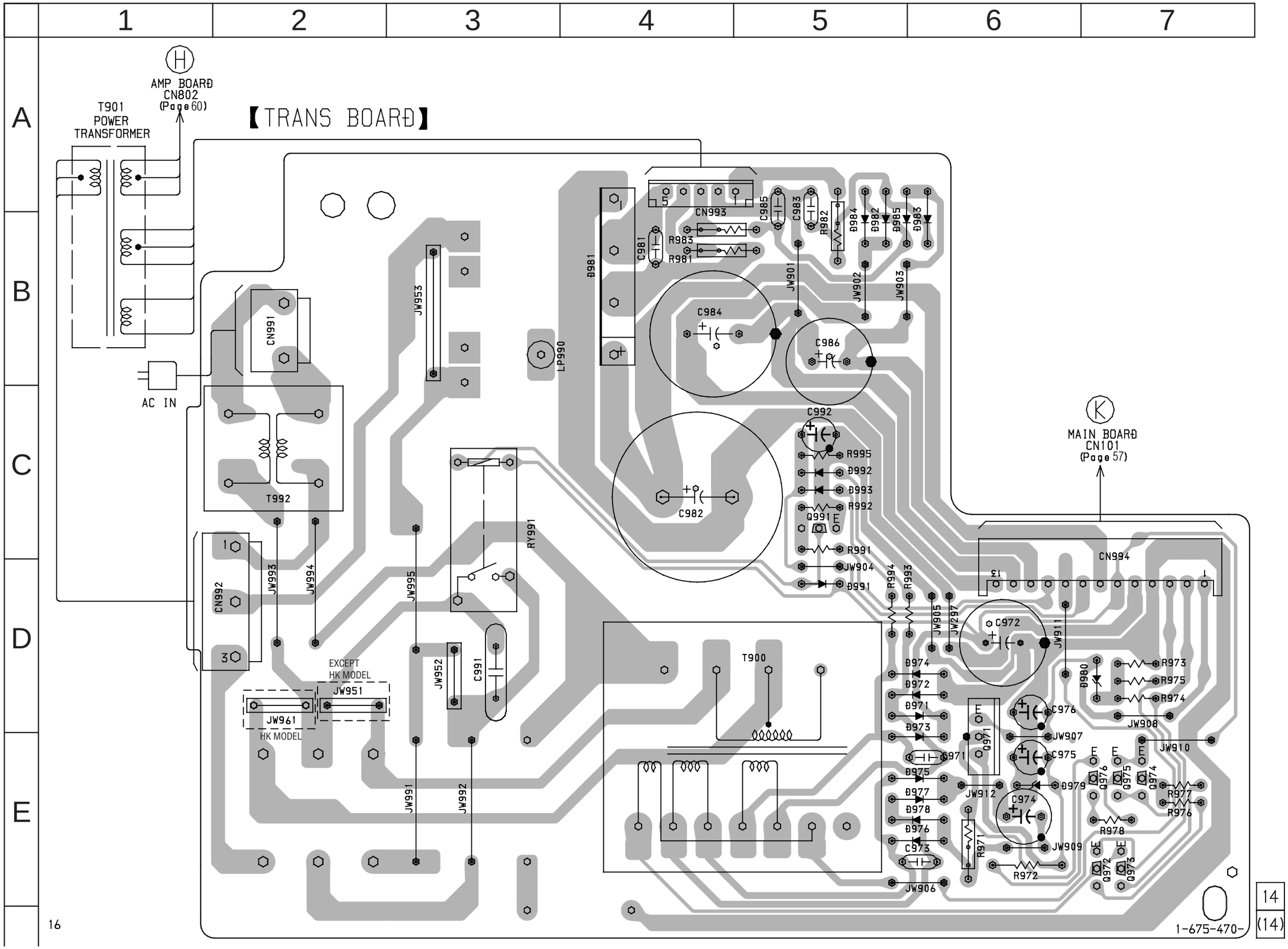
ILLUMINATION
MD INSERT

6-19. Printed Wiring Board – POWER Section –

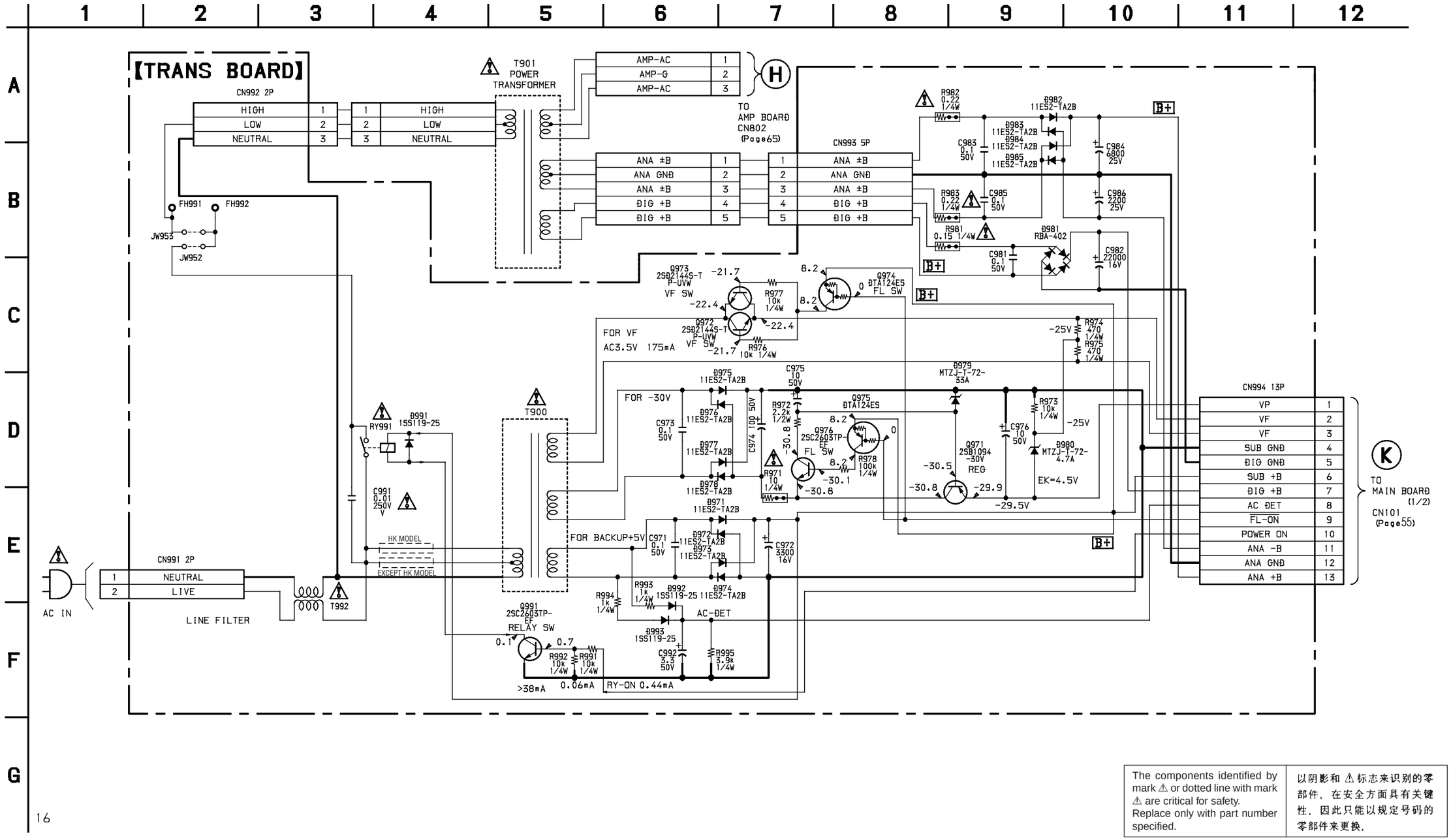
• See page 49 for Circuit Boards Location.

• **Semiconductor Location**

Ref. No.	Location
D971	D-6
D972	D-6
D973	E-6
D974	D-6
D975	E-6
D976	E-6
D977	E-6
D978	E-6
D979	E-6
D980	D-7
D981	B-4
D982	B-5
D983	B-6
D984	B-5
D985	B-5
D991	D-5
D992	C-5
D993	C-5
Q971	D-6
Q972	E-7
Q973	E-7
Q974	E-7
Q975	E-7
Q976	E-7
Q991	C-5

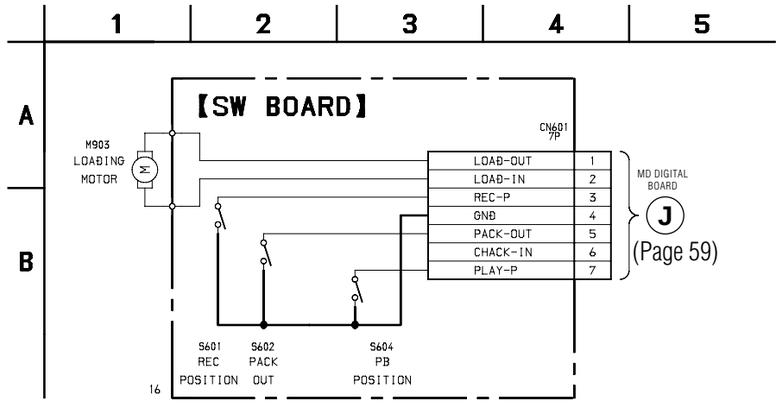


6-20. Schematic Diagram – POWER Section –



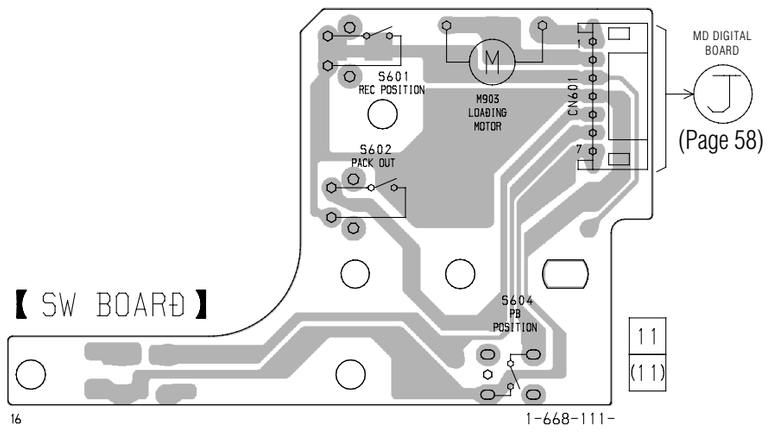
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	以阴影和 ⚠ 标志来识别的零部件，在安全方面具有关键性．因此只能以规定号码的零部件来更换．

6-21. Schematic Diagram – BD SWITCH Section –

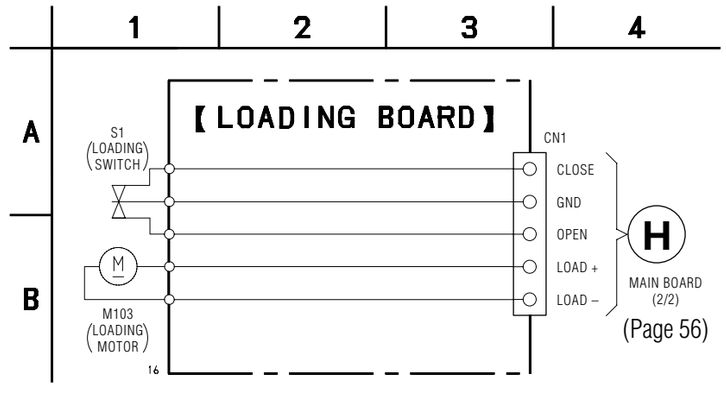


6-22. Printed Wiring Board – BD SWITCH Section –

• See page 40 for Circuit Boards Location.

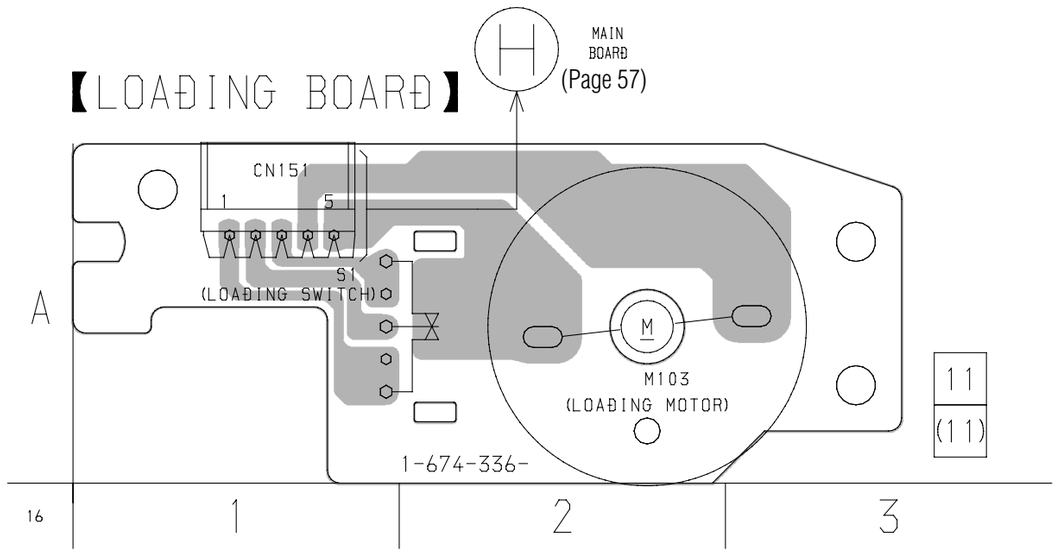


6-23. Schematic Diagram – LOADING Section –



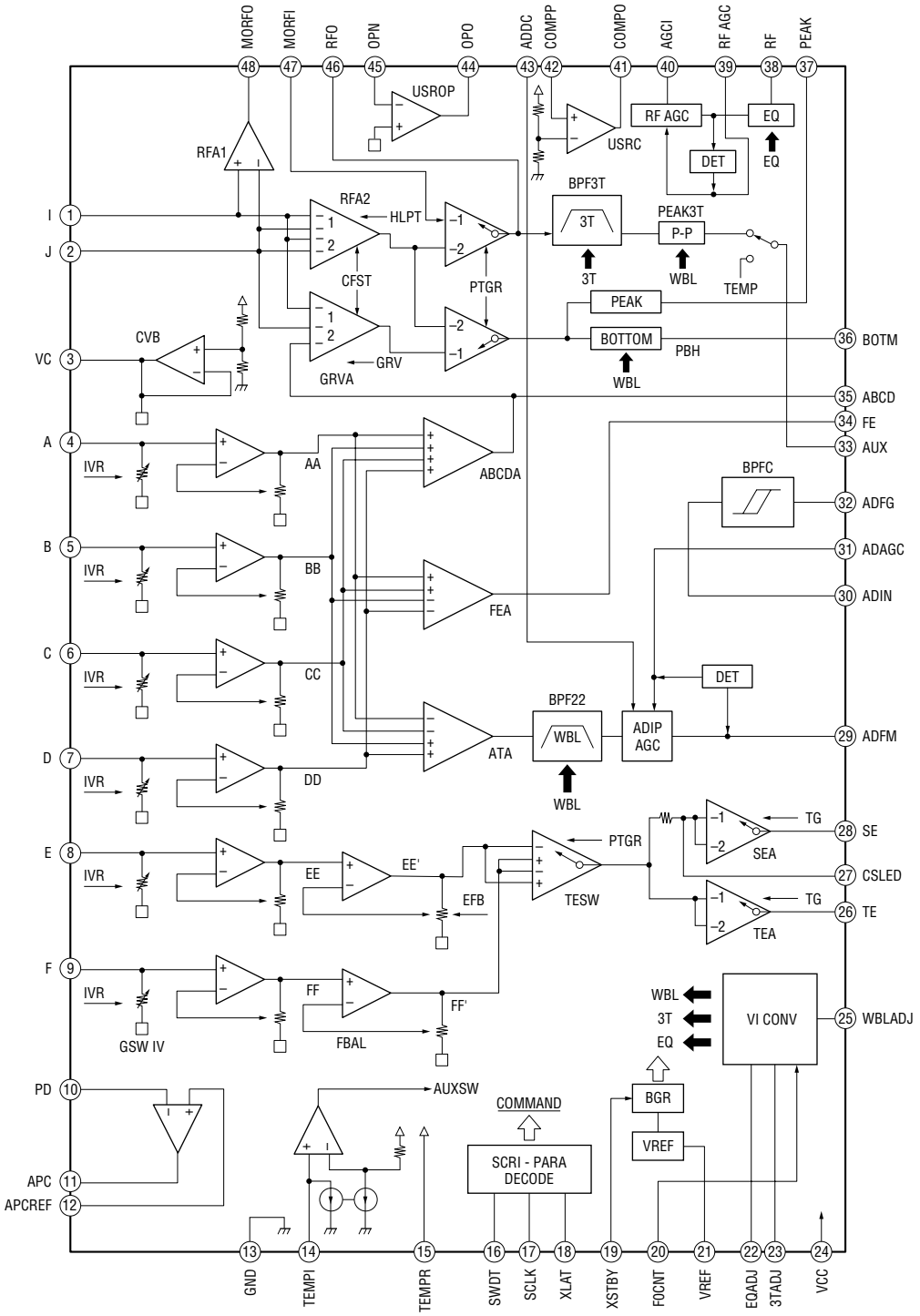
6-24. Printed Wiring Board – LOADING Section –

• See, page 40 for Circuit Boards Location.



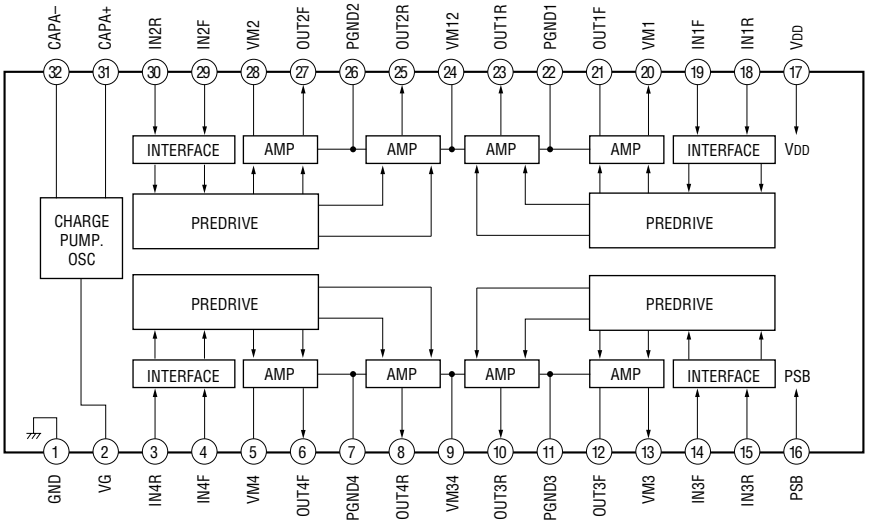
6-25. IC BLOCK DIAGRAMS

• BD (MD) BOARD (1/2)
IC101 CXA2523AR



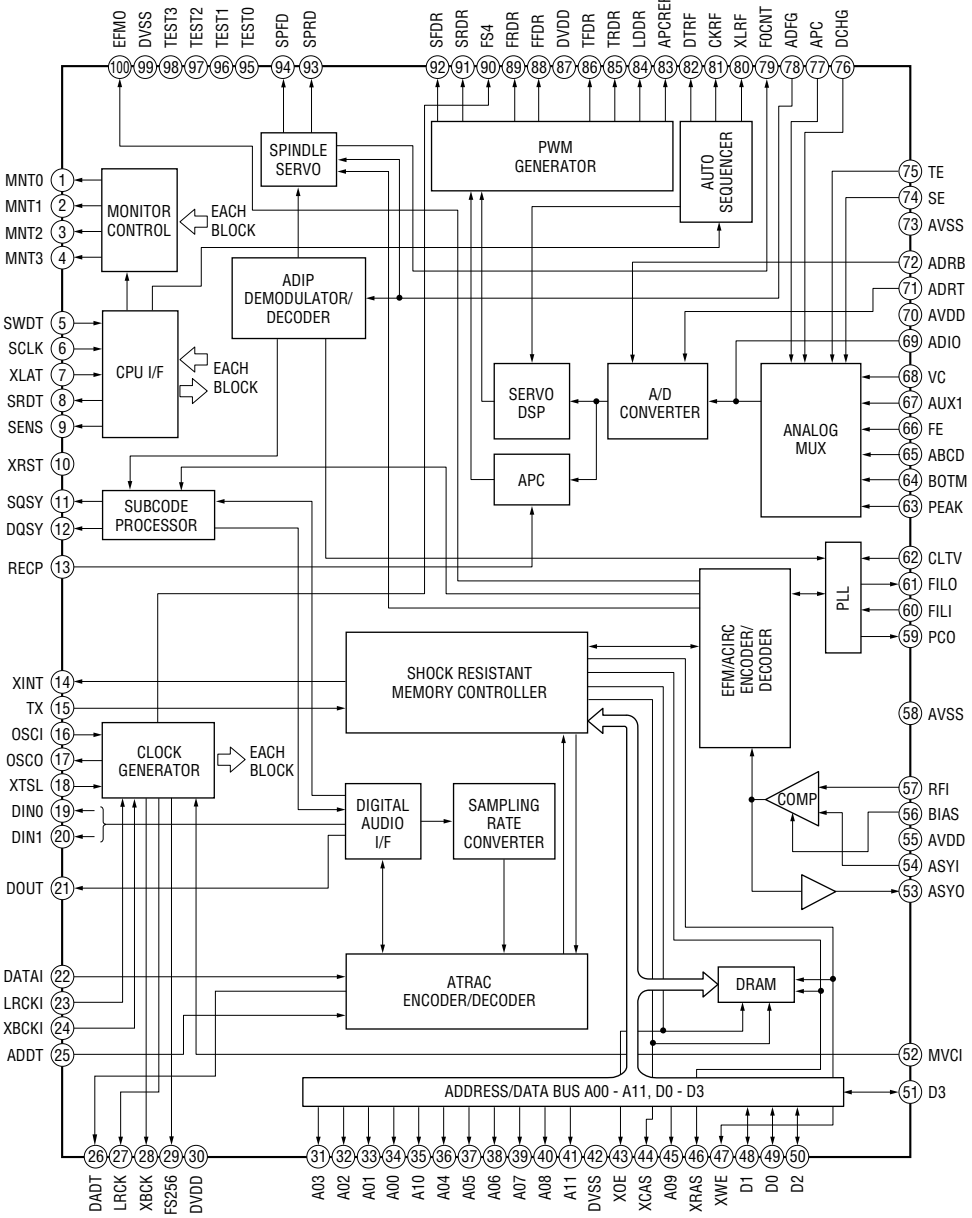
BD (MD) BOARD (1/2)

IC152 BH6511FS



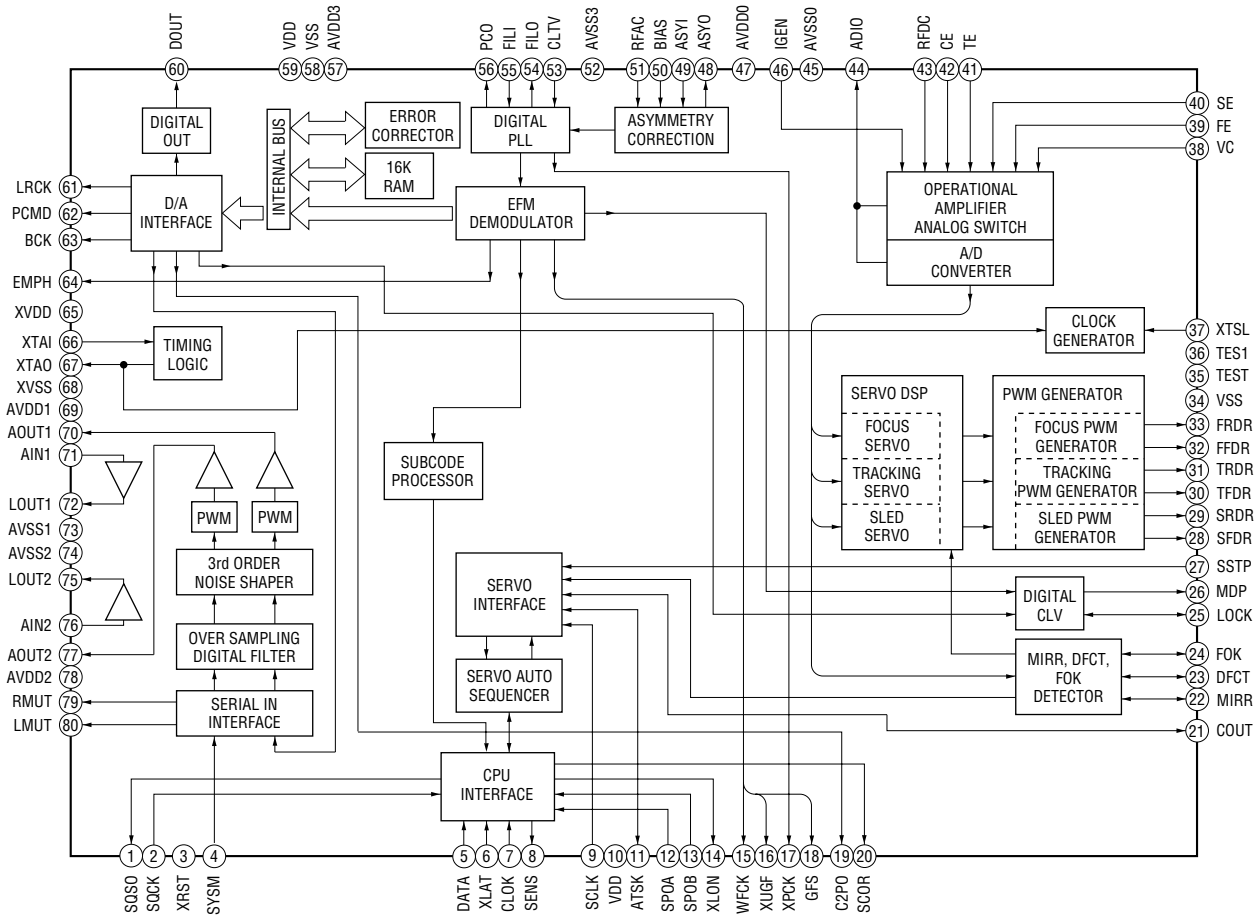
BD (MD) BOARD (2/2)

IC121 CXD2654R



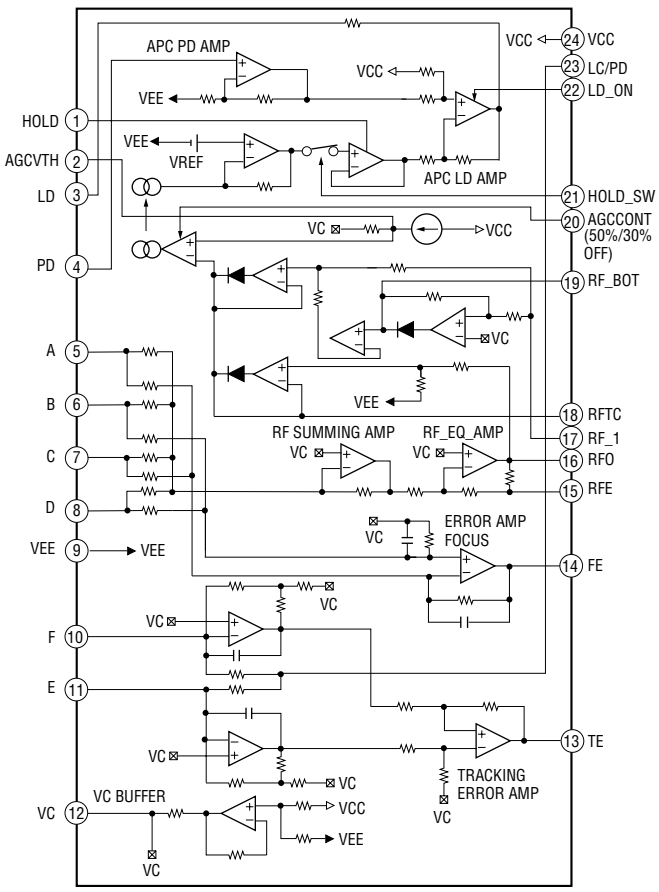
BD (CD) BOARD

IC101 CXD2587Q



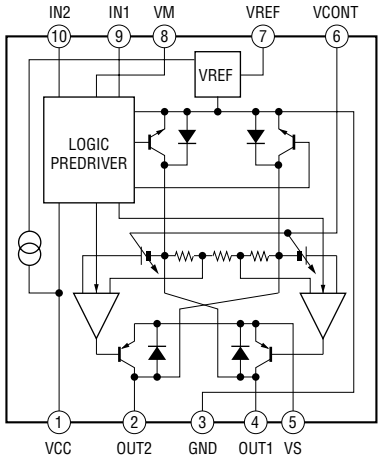
BD (CD) BOARD

IC103 CXA2568M-T6

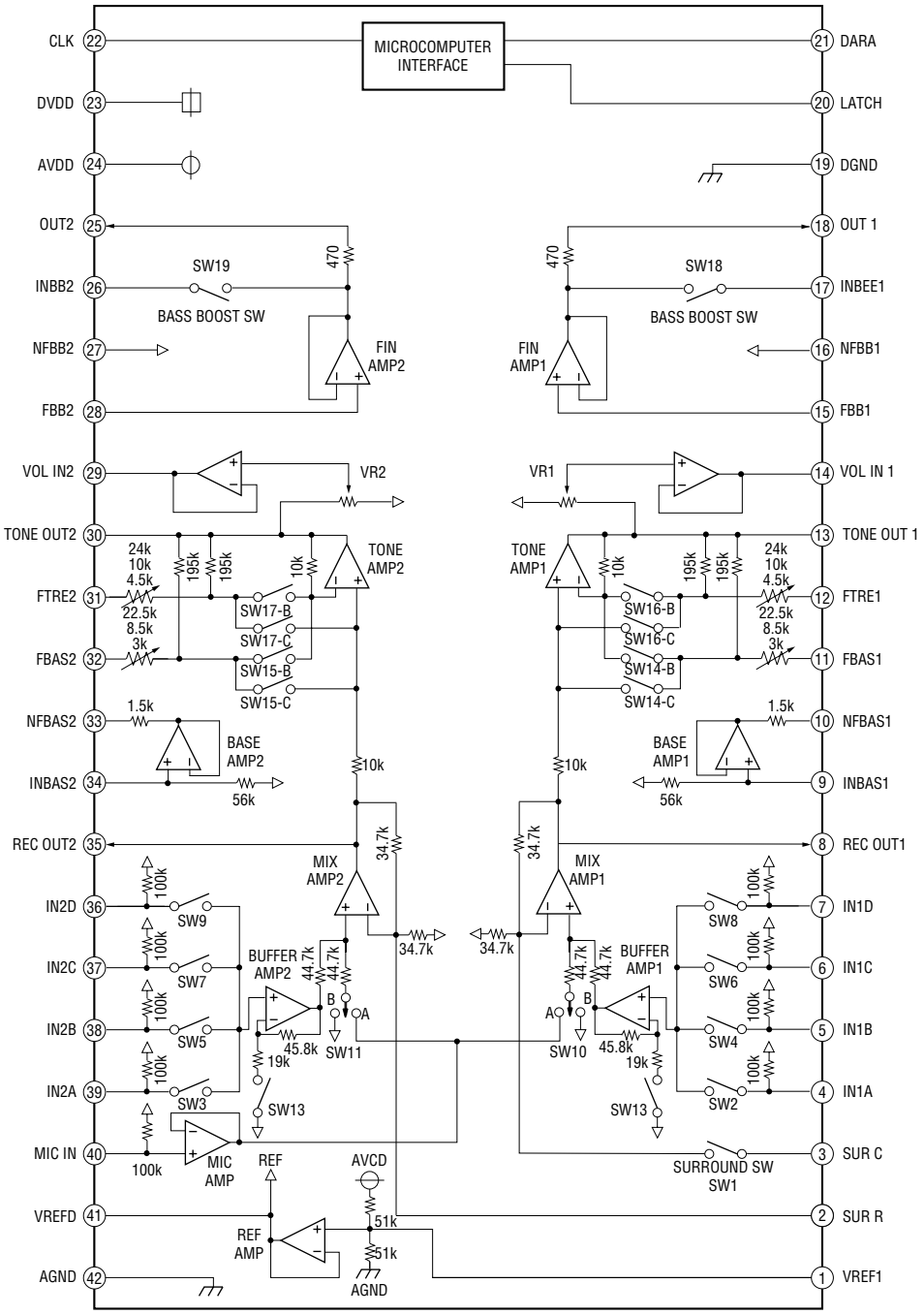


BD DIGITAL BOARD

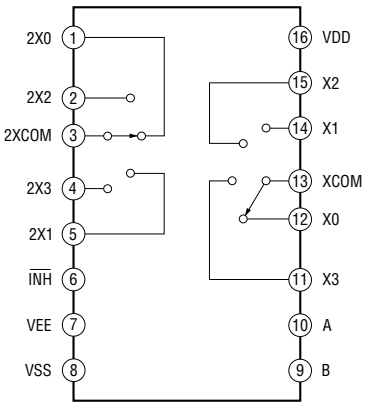
IC153 LB1830M-S-TE-L



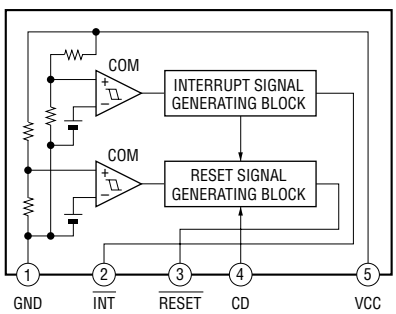
MAIN BOARD (1/2)
IC301 M62428AFP600C



MAIN BOARD (1/2)
IC302 MC14052BF

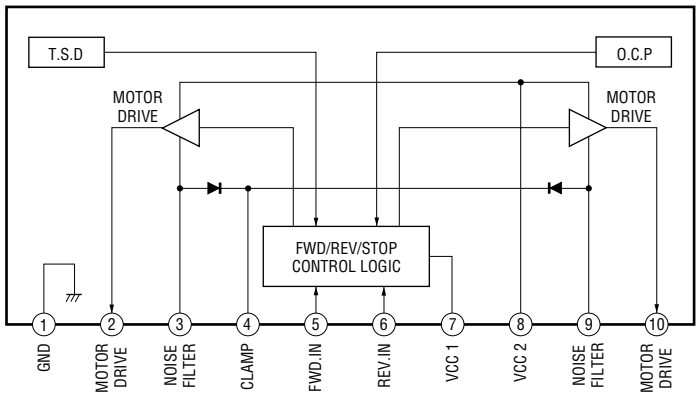


MAIN BOARD (1/2)
IC931 M62016L



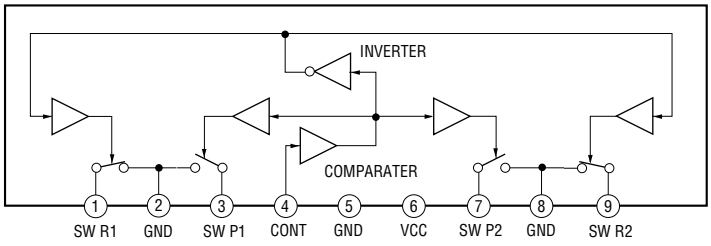
MAIN BOARD (2/2)

IC211 LB1641



TC BOARD

IC432 μPC1330HA



6-26. ZIC PIN FUNCTION DESCRIPTION

• IC101 RF Amplifier (CXA2523AR) (BD(MD) board (1/2))

Pin No.	Pin Name	I/O	Function
1	I	I	I-V converted RF signal I input
2	J	I	I-V converted RF signal J input
3	VC	O	Middle point voltage (+1.5V) generation output
4 to 9	A to F	I	Signal input from the optical pick-up detector
10	PD	I	Light amount monitor input
11	APC	O	Laser APC output
12	APCREF	I	Reference voltage input for setting laser power
13	GND	—	Ground
14	TEMPI	I	Temperature sensor connection
15	TEMPR	O	Reference voltage output for the temperature sensor
16	SWDT	I	Serial data input from CXD2654R
17	SCLK	I	Serial clock input from CXD2654R
18	XLAT	I	Latch signal input from CXD2654R “L”: Latch
19	XSTBY	I	Stand by signal input “L”: Stand by
20	F0CNT	I	Center frequency control voltage input of BFF22, BPF3T, EQ from CXD2654R
21	VREF	O	Reference voltage output (Not used)
22	EQADJ	I/O	Center frequency setting pin for the internal circuit EQ
23	3TADJ	I/O	Center frequency setting pin for the internal circuit BPF3T
24	VCC	—	+3V power supply
25	WBLADJ	I/O	Center frequency setting pin for the internal circuit BPF22
26	TE	O	Tracking error signal output to CXD2654R
27	CSLED	—	External capacitor connection pin for the sled error signal LPF
28	SE	O	Sled error signal output to CXD2654R
29	ADFM	O	FM signal output of ADIP
30	ADIN	I	ADIP signal comparator input ADFM is connected with AC coupling
31	ADAGC	—	External capacitor connection pin for AGC of ADIP
32	ADFG	O	ADIP duplex signal output to CXD2654R
33	AUX	O	I3 signal/temperature signal output to CXD2654R (Switching with a serial command)
34	FE	O	Focus error signal output to CXD2654R
35	ABCD	O	Light amount signal output to CXD2654R
36	BOTM	O	RF/ABCD bottom hold signal output to CXD2654R
37	PEAK	O	RF/ABCD peak hold signal output to CXD2654R
38	RF	O	RF equalizer output to CXD2654R
39	RFAGC	—	External capacitor connection pin for the RF AGC circuit
40	AGCI	I	Input to the RF AGC circuit The RF amplifier output is input with AC coupling
41	COMPO	O	User comparator output (Not used)
42	COMPP	I	User comparator input (Fixed at “L”)
43	ADDC	I/O	External capacitor pin for cutting the low band of the ADIP amplifier
44	OPO	O	User operation amplifier output (Not used)
45	OPN	I	User operation amplifier inversion input (Fixed at “L”)
46	RFO	O	RF amplifier output
47	MORFI	I	Groove RF signal is input with AC coupling
48	MORFO	O	Groove RF signal output

• Abbreviation
APC: Auto Power Control
AGC: Auto Gain Control

• **IC101 DIGITAL SIGNAL PROCESSOR (CXD2587Q) (BD(CD) board)**

Pin No.	Pin Name	I/O	Function
1	SQSO	O	Sub-Q 80-bit and PCM peak level data output (CD text data output)
2	SQCK	I	Clock input for SQSO read-out
3	XRST	I	System reset "L" : reset
4	SYSM	I	Muting input "H" : mute
5	DATA	I	Data input, supplied from CPU
6	XLAT	I	Latch input, supplied from CPU
7	CLOK	I	Clock input, supplied from CPU
8	SENS	O	SENS signal output
9	SCLK	I	SENS serial clock signal input
10	VDD	—	Digital power supply
11	ATSK	I/O	Input pin for anti-shock (Connected to ground)
12	SPOA	I	Microcomputer interface escape input A (Connected to ground)
13	SPOB	I	Microcomputer interface escape input B (Connected to ground)
14	XLON	O	Microcomputer escape interface output
15	WFCK	O	WFCK output (Not used)
16	XUGF	O	Not used
17	XPCK	O	Not used
18	GFS	O	Not used
19	C2PO	O	Not used
20	SCOR	O	Sub-code sync output
21	COUT	I/O	Not used
22	MIRR	I/O	Mirror signal input/output (Not used)
23	DFCT	I/O	Defect signal input/output (Not used)
24	FOK	I/O	Focus OK input/output (Not used)
25	LOCK	I/O	Not used
26	MDP	O	Output to control spindle motor servo
27	SSTP	I	Input signal to detect disc inner most track
28	SFDR	O	Solid drive output
29	SRDR	O	Solid drive output
30	TFDR	O	Tracking drive output
31	TRDR	O	Tracking drive output
32	FFDR	O	Focus drive output
33	FRDR	O	Focus drive output
34	VSS	—	Digital ground
35	TEST	I	TEST input pin connected normally to ground
36	TES1	I	TEST input pin connected normally to ground
37	XTSL	I	X'tal selection input (Connected to ground)
38	VC	I	Center voltage input pin
39	FE	I	Focus error signal input
40	SE	I	Solid error signal input

• Abbreviation
GFS : Guarded Frame Sync

Pin No.	Pin Name	I/O	Function
41	TE	I	Tracking error signal input
42	CE	I	Center servo analog input
43	RFDC	I	RF signal input
44	ADIO	O	Test pin (Not used)
45	AVSS0	—	Analog ground
46	IGEN	I	Stabilized current input for operational amplifiers
47	AVDD0	—	Analog power supply
48	ASYO	O	EFM full swing output
49	ASYI	I	EFM asymmetry comparate voltage input
50	BIAS	I	Asymmetry circuit constant current input
51	RFAC	I	EFM signal input
52	AVSS3	—	Analog ground
53	CLTV	I	Control voltage input for master VCO1
54	FILO	O	Filter output for master PLL
55	FILI	I	Filter input for master PLL
56	PCO	O	Charge-pump output for master PLL
57	AVDD3	—	Analog power supply
58	VSS	—	Digital ground
59	VDD	—	Digital power supply
60	DOUT	O	Digital-out output pin
61	LRCK	O	D/A interface LR clock output (f = Fs) (Not used)
62	PCMD	O	D/A interface serial data output (Not used)
63	BCK	O	D/A interface bit clock output (Not used)
64	EMPH	O	Playback disc output in emphasis mode (Not used)
65	XVDD	—	Power supply for master clock
66	XTAI	I	X'tal oscillator circuit input (16.9344MHz)
67	XTAO	O	X'tal oscillator circuit output (16.9344MHz)
68	XVSS	—	Ground for master clock
69	AVDD1	—	Analog power supply
70	AOUT1	O	L-ch analog output
71	AIN1	I	L-ch operational amplifiers input
72	LOUT1	O	L-ch line output
73	AVSS1	—	Analog ground
74	AVSS2	—	Analog ground
75	LOUT2	O	R-ch line output
76	AIN2	I	R-ch operational amplifiers input
77	AOUT2	O	R-ch analog output
78	AVDD2	—	Analog power supply
79	RMUT	O	R-ch “0” detection flag output (Not used)
80	LMUT	O	L-ch “0” detection flag output (Not used)

• Abbreviation
EFM : Eight to Fourteen Modulation
PLL : Phase Locked Loop

• **IC501 MASTER CONTROL (M30620MC-A18FP) (MAIN board (2/2))**

Pin No.	Pin Name	I/O	Function
1	STKPOWER	O	Power amplifier ON/OFF signal output
2	B-SHUT	I	REEL pulse input from tape cassette deck
3	F-RY	O	Front speaker relay control output
4	HEADPHONE	I	Headphones detection input. "H": Headphones detected, "L" : Headphones not detected
5	CD-POWER	O	CD power ON signal output
6	$\overline{\text{TA-MUTE}}$	O	LINE mute ON/OFF signal output
7	LED	—	Not used
8	BYTE	—	Connected to GND
9	CNVSS	—	Connected to GND
10	SUBXIN	I	X'tal (32.768 kHz) input
11	SUBXOUT	O	X'tal (32.768 kHz) output
12	RESET	I	Reset signal input
13	X-OUT	O	X'tal (16 MHz) output
14	VSS	—	GND
15	X-IN	I	X'tal (16 MHz) input
16	VCC	—	+5 V power
17	NM1	I	(Always +5 V)
18	LED	I	Not used
19	SCOR	I	Subcode request signal output
20	RDS-INT	I	RDS data input
21	RDS-DATA	I	
22	AC-CUT	I	AC power shut-down signal input
23	LED	O	MD PLAY
24	LED	O	MD PAUSE
25	LED	O	MD REC
26	LED	O	CD PLAY
27	PROTECT IN	I	Speaker protect signal input. "H": OFF, "L": ON
28	MD-RESET	O	MD reset signal output
29	IIC-SCL	I/O	I^2C bus CLK input/output
30	IIC-SDA	I/O	I^2C bus DATA input/output
31	TXD	—	Not used
32	SQ-DATA-IN	I	Subcode Q data clock input
33	SQ-CLK	O	Subcode Q data clock output
34	FL-RESET	O	FL reset signal
35	FL-DATA	O	FL data output
36	FL-CHIP SELECT	O	FL chip select signal
37	FL-CLK	O	FL clock output
38	62LAT	O	M62428AFP (IC301) latch signal output
39	STBY-LED	O	Sub clock signal output (during test mode)
40	LED	O	CD PAUSE
41	LED	O	FWD PLAY (tape cassette)
42	$\overline{\text{FL-ON}}$	O	FL switch ON. "H": ON, "L": OFF
43	POWER-ON	O	Standby relay ON/OFF
44	LED	O	REV PLAY (tape cassette)
45	FUNC-SEL1	O	"L": TAPE, "H": LINE IN. Function select signal output
46	OPT-SEL	O	DIGITAL INPUT select signal output
47	62DATA	O	M62428AFP (IC301) data output
48	62CLK	O	M62428AFP (IC301) clock output
49	ST-MUTE	O	STMUTE signal output
50	STEREO	I	Stereo signal input from tuner

Pin No.	Pin Name	I/O	Function
51	TUNED	I	Tuned signal input from tuner
52	ST-CE	O	Tuner chip enable output
53	ST-DOUT	O	Tuner data output
54	ST-DIN	I	Tuner data input
55	ST-CLK	O	Tuner clock output
56	SENS	I	BD detection signal input
57	HDLD	O	Mode hold signal output
58	CD-LAT	O	CD latch signal output
59	CD-RESET	O	CD reset signal output
60	LED	O	REC (tape cassette)
61	LED	O	MD ornament (blue)
62	VCC	—	+5 V power
63	LED	O	PAUSE (cassette deck)
64	VSS	—	GND
65	AMS-IN	I	AMS signal input
66	LOAD-OUT	O	Loading motor control input/output.
67	LOAD-IN	O	
68	B-TRG	O	Tape cassette trigger output. "H": ON. "L": OFF
69	CAPM-CNT1	O	Capstan (Forward rotation - stop)
70	IN-SW	I	Loading-in signal input
71	OPEN	O	Loading-out signal input
72	TC-MUTE	O	Tape cassette LINE mute. "H": ON. "L": OFF
73	REC/PB/PASS	I	REC/PB/PASS
74	DOLBY NR	O	DOLBY NR. "H": ON. "L": OFF
75	REC MUTE	O	REC mute. "H": OFF, "L": ON
76	BIAS	O	Bias. "H": ON. "L": OFF
77	EQ-H/N	O	Equalizer. "H": HI, "L": normal (not used)
78	TC-RELAY	O	Tape cassette. "H": ON. "L": OFF
79	ALC	O	ALC. "H": OFF, "L": ON
80	B-PLAY-SW	I	Tape cassette PLAY switch input
81	CD DATA	O	CD data signal output
82	CD CLK	O	CD clock signal output
83	REC OUT CONT	O	REC output control "L": MUTE (not used)
84	JOG A	—	Not used
85	JOG B	—	Not used
86	VOL A	I	Volume control signal input-A
87	VOL B	I	Volume control signal input-B
88	SIRCS	I	SIRCS signal input
89 to 91	KEY 0 to KEY 2	I	Key input
92	MD-REC-R	I	MD record level signal input (R)
93	B-HALF	I	Tape cassette deck half
94	MD-REC-L	I	MD record level signal input (L)
95	MODEL-IN	I	MODEL input signal (Note used)
96	AG	—	GND (analog)
97	SPEC-IN	I	SPEC input
98	VREF	I	Reference voltage input
99	AVCC	I	+5 V power
100	TEST	—	Not used

SECTION 7
EXPLODED VIEWS

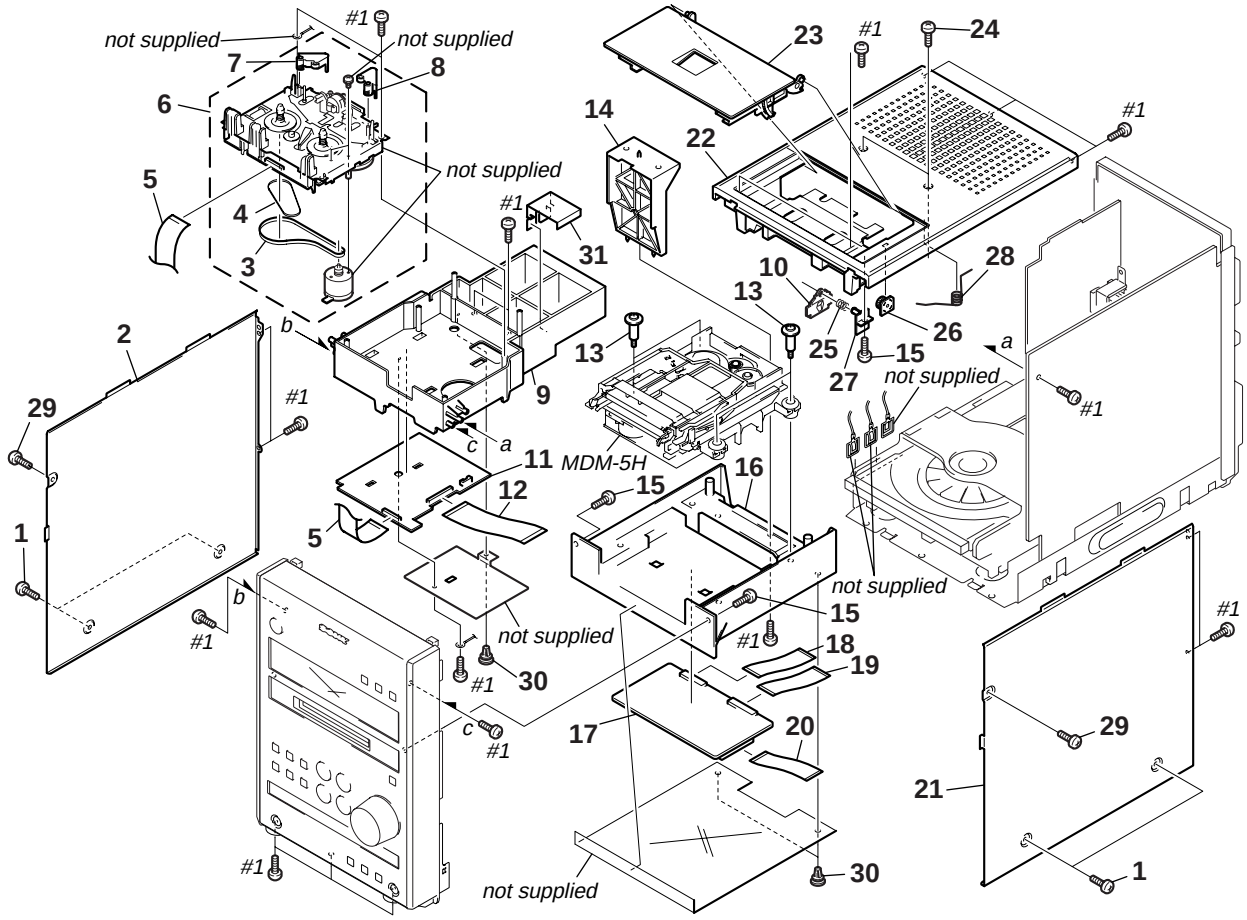
NOTE:
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

- Color Indication of Appearance Parts Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts of Color Cabinet's Color
- Abbreviation
  HK : Hong Kong model

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

以阴影和 ⚠ 标志来识别的零部件，在安全方面具有关键性，因此只能以规定号码的零部件来更换。

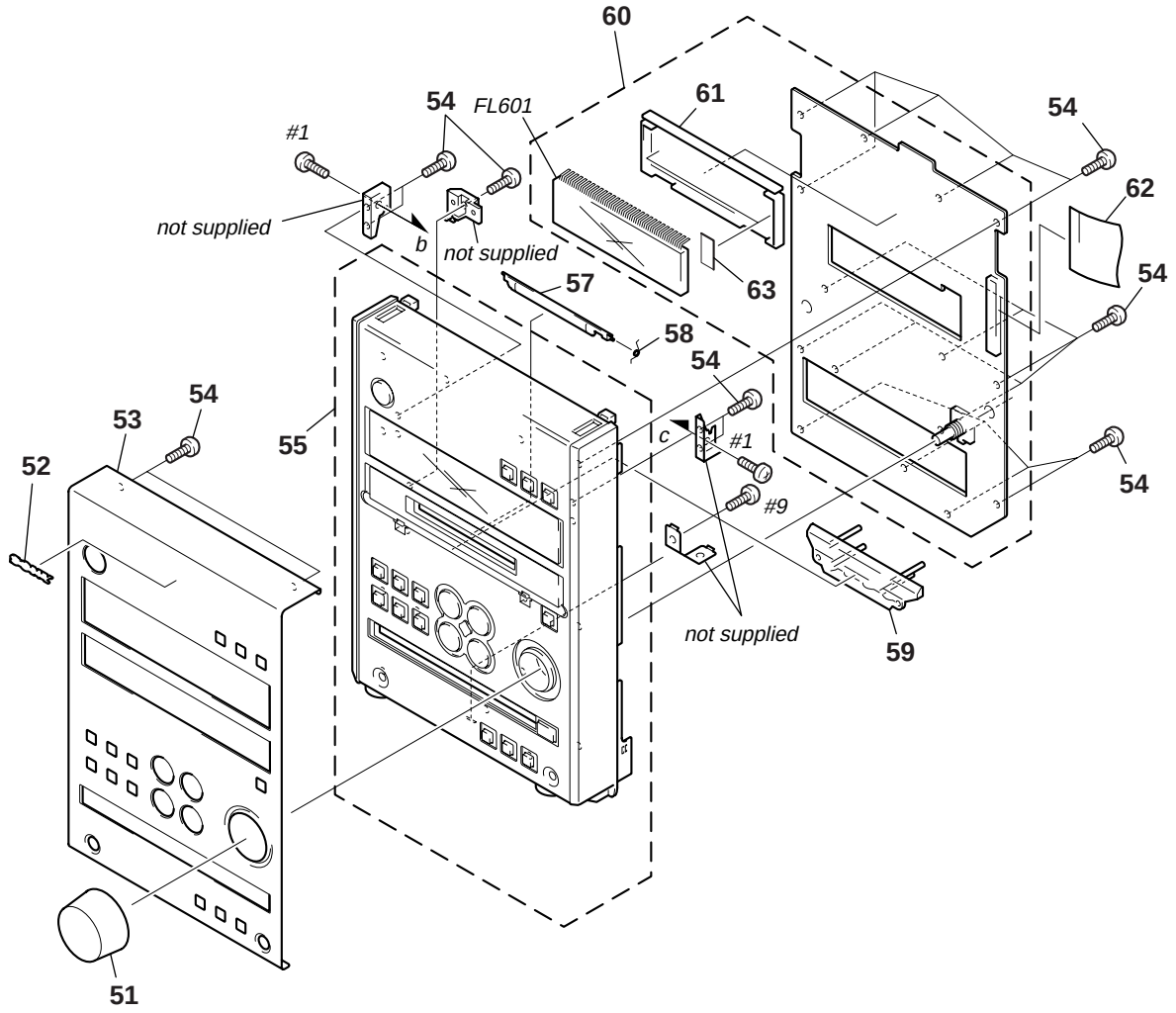
7-1. CASE AND CASETTE MECHANISM DECK SECTION (CMAL1Z027A)



Ref. No.	Part No.	Description	Remark
1	3-363-099-11	SCREW(CASE 3 TP2)	
2	4-224-106-01	CASE(L) (SILVER)	
2	4-224-106-11	CASE(L) (METALLIC)	
2	4-224-106-21	CASE(L) (WHITE)	
3	4-997-983-01	BELTMAIN	
4	4-997-984-01	F/RBELT	
5	1-791-693-11	WIRE(FLAT TYPE) (12 CORE)	
6	A-4411-902-A	MECHANICAL ASSY, CASSETTE	
7	X-4949-569-1	PINCHROLLER BLK L ASSY	
8	X-4949-568-1	PINCHROLLER BLK R ASSY	
9	4-224-110-01	HOLDER (TCM)	
10	4-224-119-01	CATCHER, PUSH	
11	A-4426-954-A	TC BOARD, COMPLETE	
12	1-791-696-11	WIRE(FLAT TYPE) (25 CORE)	
13	4-212-589-01	SCREW (+BVTPWH M3), STEP	
14	4-224-111-01	HOLDER (MD)	
15	4-951-620-01	SCREW (2.6X8), +BVTP	
16	4-221-097-01	BRACKET (MDM)	
17	A-4426-083-A	MD DIGITAL BOARD, COMPLETE	
18	1-777-240-11	WIRE(FLAT TYPE) (21 CORE)	

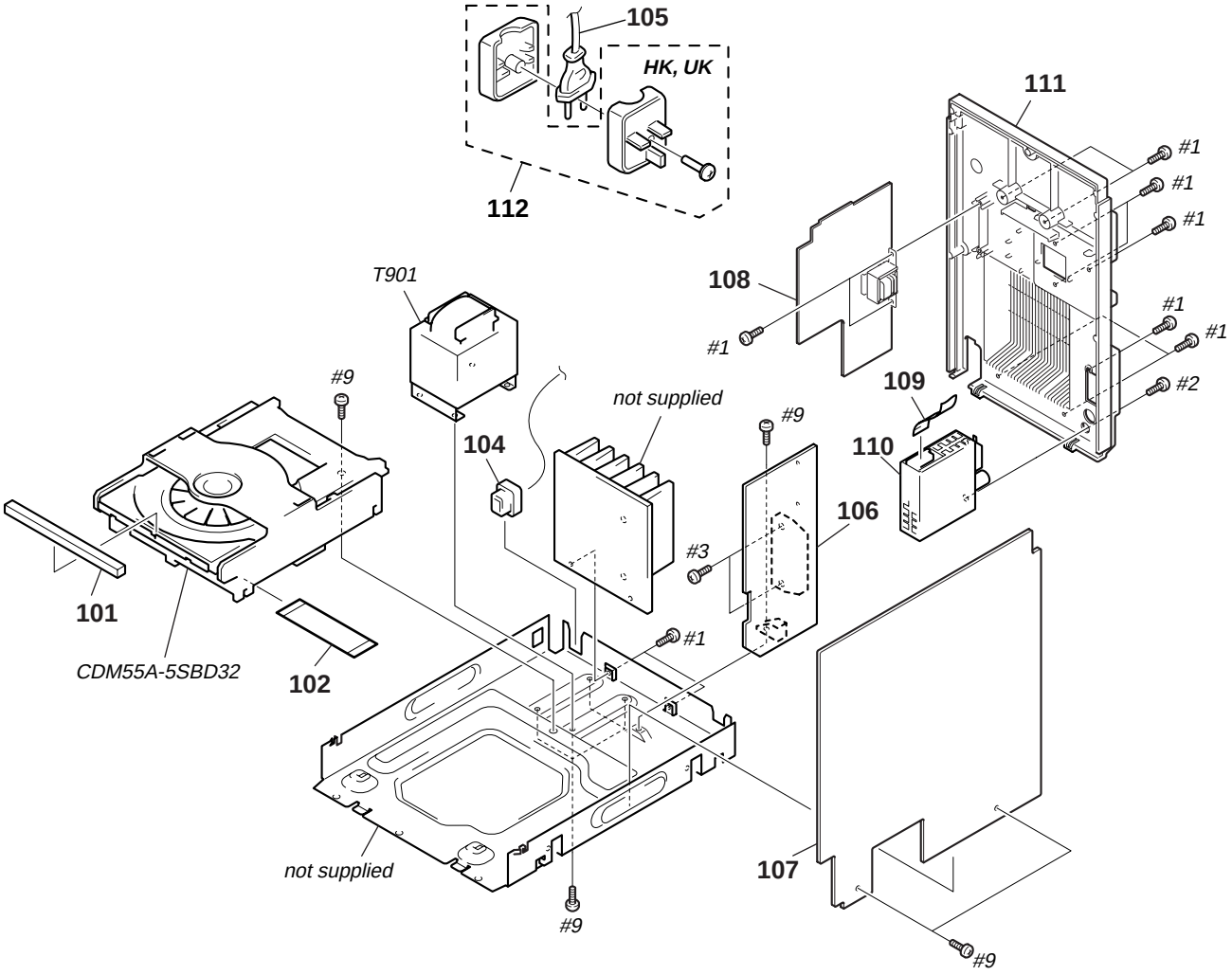
Ref. No.	Part No.	Description	Remark
19	1-791-211-11	WIRE(FLAT TYPE) (23 CORE)	
20	1-773-213-11	WIRE(FLAT TYPE) (25 CORE)	
21	4-224-107-01	CASE(R) (SILVER)	
21	4-224-107-11	CASE(R) (METALLIC)	
21	4-224-107-21	CASE(R) (WHITE)	
22	4-224-115-01	CASE(U)(SILVER)	
22	4-224-115-11	CASE(U)(METALLIC)	
22	4-224-115-21	CASE(U)(WHITE)	
23	X-4952-232-1	LID(TC) ASSY/S (SILVER)	
23	X-4952-252-1	LID(TC) ASSY/X (METALLIC)	
23	X-4952-352-1	LID(TC) ASSY/W (WHITE)	
24	4-212-531-11	SCREW	
25	4-224-117-01	SPRING (PUSH),COMPRESSION	
26	4-224-104-01	DAMPER	
27	4-224-116-01	BRACKET (PUSH)	
28	4-224-121-01	SPRING (TC), TORSION	
29	3-363-099-81	SCREW (CASE 3 TP2)	
30	4-812-134-00	RIVET (DIA. 3.5), NYLON	
31	4-227-235-01	COVER (CAT)	

7-2. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
51	4-224-113-01	KNOB(VOL)	
52	4-925-161-81	EMBLEM (4-A), SONY (METALLIC)	
52	4-925-161-91	EMBLEM (4-A), SONY (SILVER/WHITE)	
53	4-224-122-01	PLATE (PANEL), ORNAMENTAL (SILVER)	
53	4-224-122-11	PLATE (PANEL), ORNAMENTAL (METALLIC)	
53	4-224-122-21	PLATE (PANEL), ORNAMENTAL (WHITE)	
54	4-951-620-01	SCREW (2.6X8), +BVTP	
55	X-4952-227-1	PANEL ASSY/S, FRONT (SILVER)	
55	X-4952-230-1	PANEL ASSY/X, FRONT (METALLIC)	
55	X-4952-231-1	PANEL ASSY/W, FRONT (WHITE)	
57	4-216-729-41	LID(CARTRIDGE)	
58	4-223-771-01	SPRING (LID)	
59	4-224-137-01	INDICATOR (MD)	
60	A-4426-950-A	PANEL BOARD, COMPLETE	
61	4-221-103-01	HOLDER (FL)	
62	1-773-381-11	WIRE(FLAT TYPE) (35 CORE)	
* 63	4-955-901-01	CUSHION (FL)	
FL601	1-517-917-11	INDICATOR TUBE, FLUORESCENT	

7-3. CHASSIS SECTION

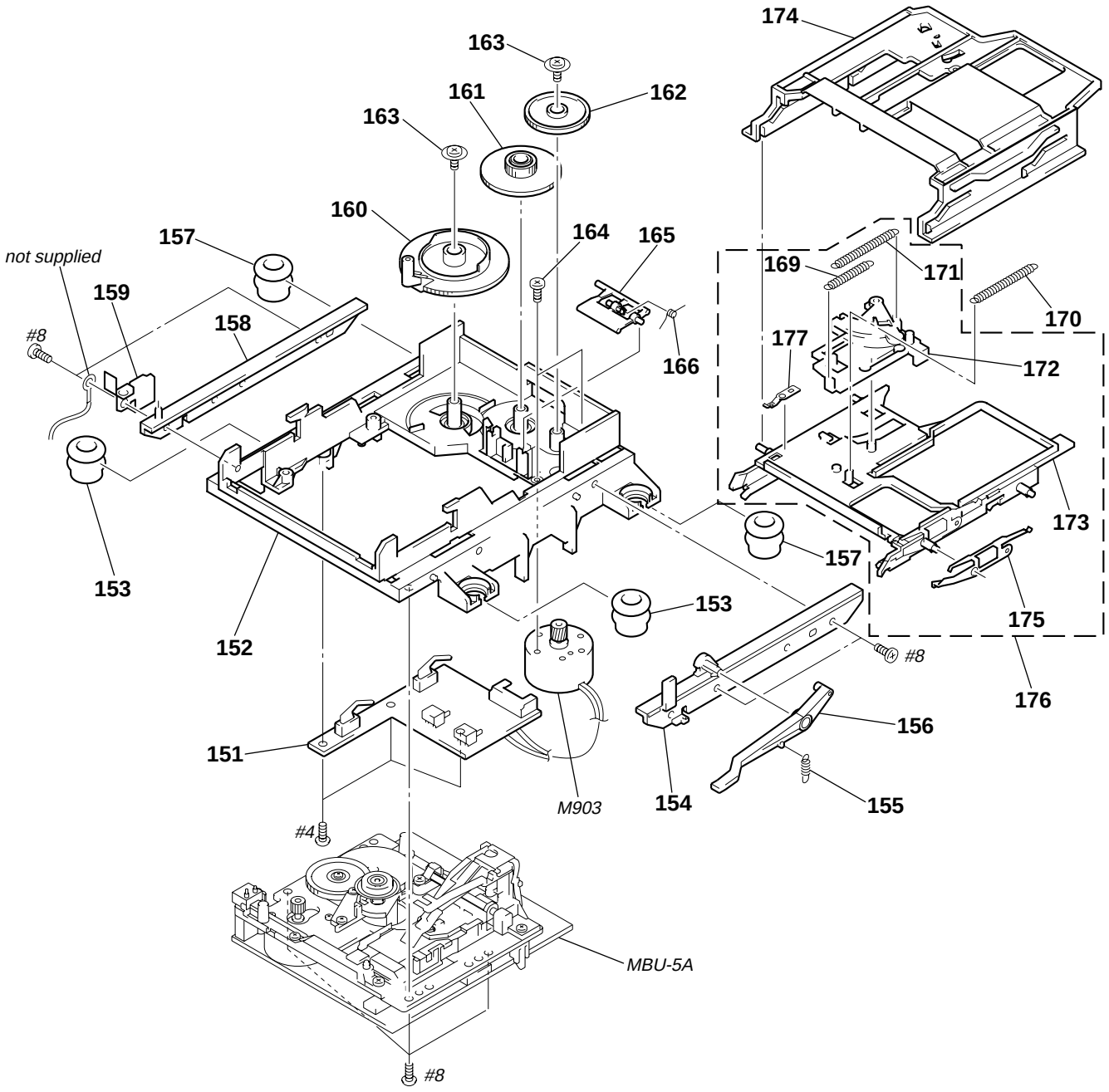


Ref. No.	Part No.	Description	Remark
101	4-224-112-01	LID(CD) (SILVER)	
101	4-224-112-11	LID(CD) (METALLIC)	
101	4-224-112-21	LID(CD) (WHITE)	
102	1-791-695-11	WIRE (FLAT TYPE) (19 CORE)	
104	3-703-244-00	BUSHING (2104), CORD	
⚠105	1-575-651-11	CORD, POWER	
106	A-4426-951-A	AMPBOARD, COMPLETE	
107	A-4428-956-A	MAIN BOARD, COMPLETE (HK)	
107	A-4473-393-A	MAIN BOARD, COMPLETE (EXCEPT HK)	
108	A-4428-957-A	TRANS BOARD, COMPLETE (HK)	
108	A-4473-394-A	TRANS BOARD, COMPLETE (EXCEPT HK)	
109	1-791-694-11	WIRE (FLAT TYPE) (15 CORE)	
110	1-693-473-21	TUNER	
111	4-224-108-01	COVER, BACK (EXCEPT HK)	
111	4-224-108-11	COVER, BACK (HK)	
112	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (HK,UK)	
⚠T901	1-435-447-11	TRANSFORMER, POWER (HK,CH)	
⚠T901	1-435-555-11	TRANSFORMER, POWER (EXCEPT HK,CH)	

以阴影和⚠标志来识别的零部件在安全方面具有关键性。因此只能以规定号码的零部件来更换。

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

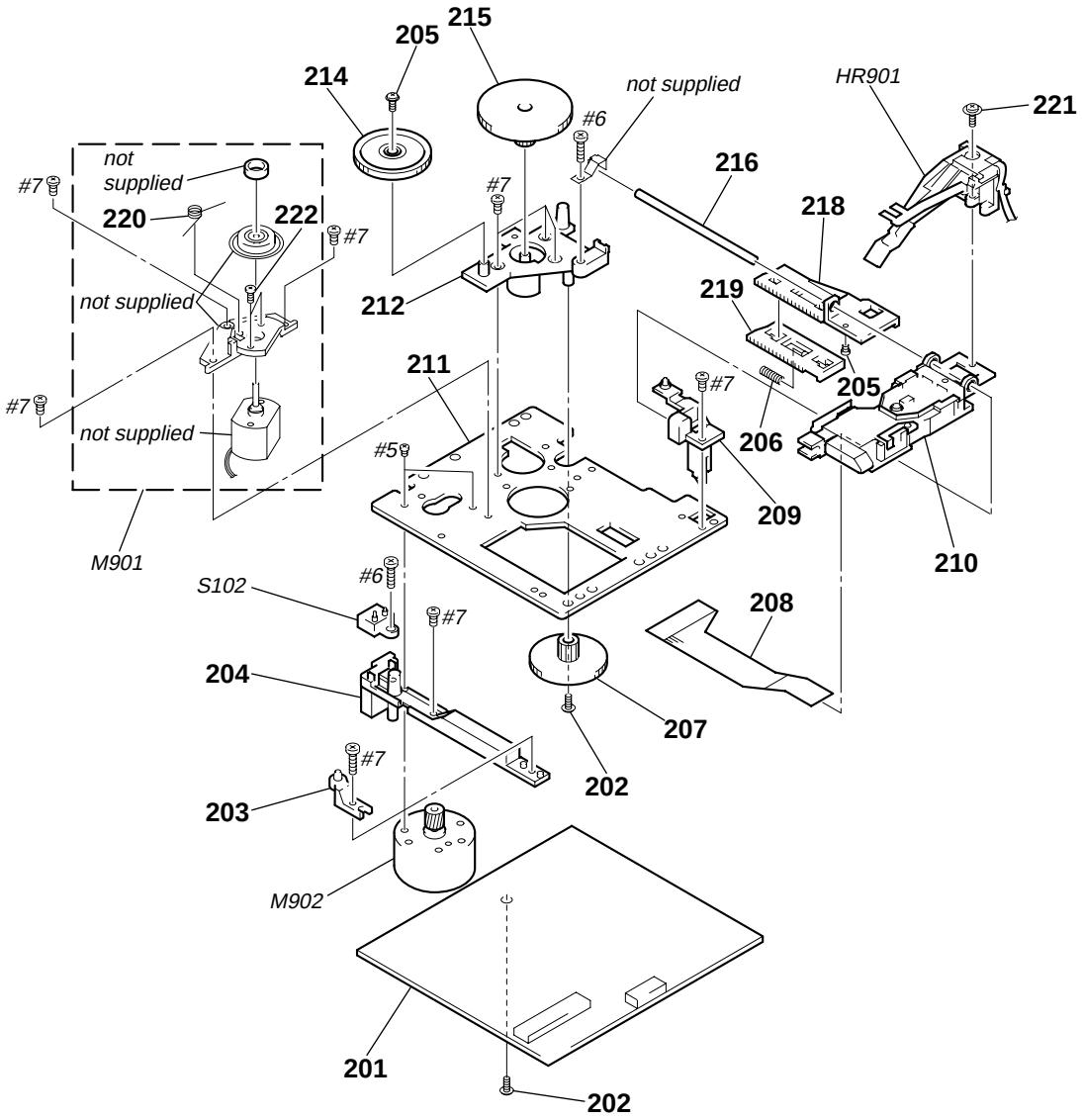
7-4. MD MECHANISM DECK SECTION-1 (MDM-5H)



Ref. No.	Part No.	Description	Remark
* 151	1-668-111-11	SWBOARD	
* 152	4-996-217-01	CHASSIS	
153	4-996-223-01	INSULATOR (F)	
* 154	4-996-218-01	BRACKET (GUIDE R)	
155	4-996-277-01	SPRING (O/C), TENSION	
156	4-996-226-01	LEVER (O/C)	
157	4-999-347-01	INSULATOR (R)	
* 158	4-996-225-01	BRACKET (GUIDE L)	
159	4-988-466-21	SPRING (ELECTROSTATIC), LEAF	
160	4-996-219-01	GEAR (CAM GEAR)	
161	4-996-220-01	GEAR (A)	
162	4-996-221-01	GEAR (B)	
163	4-933-134-01	SCREW (+PTPWH M2.6X6)	

Ref. No.	Part No.	Description	Remark
164	4-996-224-01	SCREW (1.7X3), +PWH	
165	4-996-227-04	LEVER (HEAD)	
166	4-996-229-01	SPRING (HEAD LEVER), TORSION	
169	4-996-214-01	SPRING (SLIDER), TENSION	
170	4-996-216-01	SPRING (HOLDER), TENSION	
171	4-210-396-01	SPRING (LOCK), TENSION	
172	X-4951-631-1	SLIDER ASSY	
* 173	X-4949-245-8	HOLDER ASSY	
* 174	4-996-211-01	SLIDER (CAM)	
175	4-998-763-01	SPRING (SHUTTER), LEAF	
176	A-4680-417-B	HOLDER COMPLETE ASSY	
177	4-219-019-01	SPRING (RETAINER)	
M903	X-4949-264-1	MOTOR ASSY, LOADING	

7-5. MD MECHANISM DECK SECTION-2 (MBU-5A)



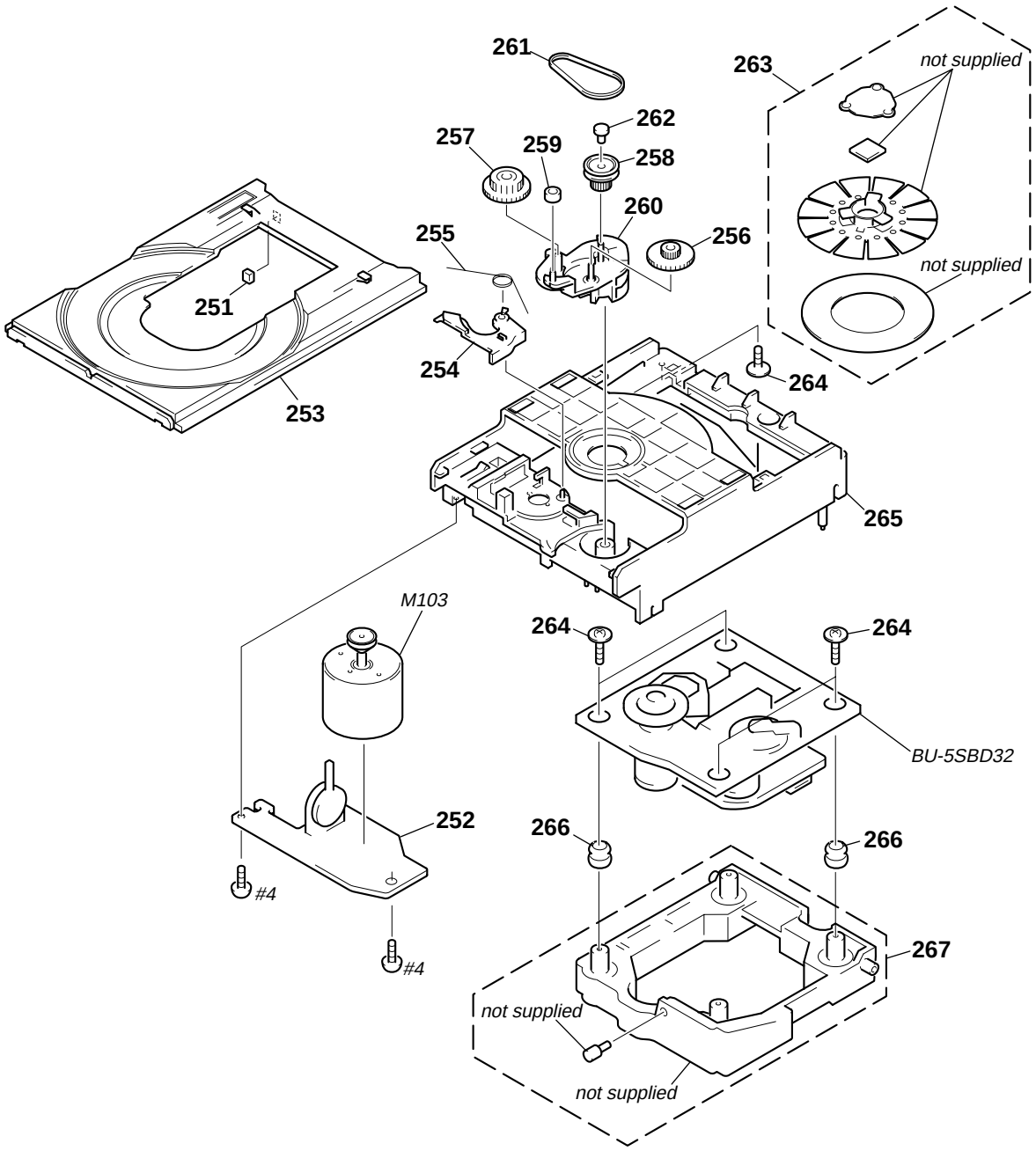
Ref. No.	Part No.	Description	Remark
* 201	A-4699-893-A	BD(MD) BOARD, COMPLETE	
202	3-372-761-01	SCREW (M1.7), TAPPING	
* 203	4-996-267-01	BASE (BU-D)	
* 204	4-996-255-01	BASE (BU-C)	
205	4-900-590-01	SCREW, PRECISION SMALL	
206	4-996-258-01	SPRING, COMPRESSION	
207	4-996-262-01	GEAR (SL-C)	
208	1-667-954-11	PCBOARD, FLEXIBLE	
* 209	4-210-664-01	BASE (BU-A)	
⚠210	A-4672-541-A	OPTICAL PICK-UP KMS-260B/J1N	
* 211	4-996-252-01	CHASSIS, BU	
* 212	4-996-254-01	BASE (BU-B)	

Ref. No.	Part No.	Description	Remark
214	4-996-260-01	GEAR (SL-A)	
215	4-996-261-01	GEAR (SL-B)	
216	4-996-265-01	SHAFT, MAIN	
218	4-996-256-01	SL(BASE)	
219	4-996-257-01	RACK (SL)	
220	4-996-263-01	SPRING (CLV), TORSION	
221	4-988-560-01	SCREW (+P 1.7X6)	
222	4-211-036-01	SCREW (1.7X2.5), +PWH	
M901	A-4672-475-A	MOTOR ASSY, SPINDLE	
M902	A-4672-474-A	MOTOR ASSY, SLED	
S102	1-762-148-21	SWITCH, PUSH (2 KEY)	
HR901	1-500-502-11	HEAD, OVER LIGHT	

以阴影和⚠标志来识别的零部件在安全方面具有关键性。因此只能以规定号码的零部件来更换。

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

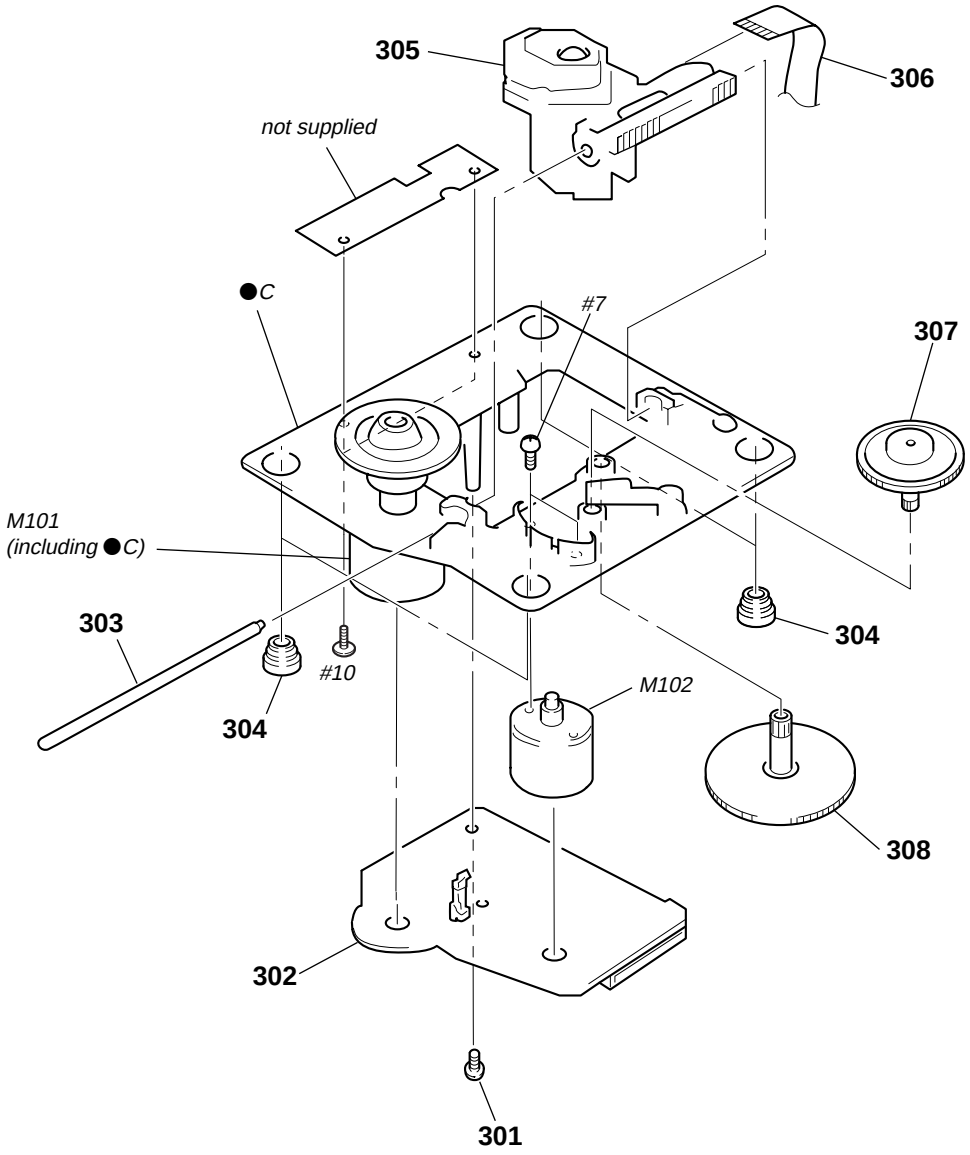
7-6. CD MECHANISM DECK SECTION-1 (CDM55A-5SBD32)



Ref. No.	Part No.	Description	Remark
251	4-925-315-31	DAMPER	
252	1-674-336-11	LOADING BOARD	
253	4-220-231-01	TRAY (CDM)	
254	4-220-229-01	LEVER (SW)	
255	4-220-239-01	SPRING, TORSION	
256	4-220-237-01	GEAR (A)	
257	4-220-238-01	GEAR (B)	
258	4-220-234-01	PULLEY (LDG)	
259	4-221-815-01	ROLLER	

Ref. No.	Part No.	Description	Remark
260	4-220-230-01	CHASSIS	
261	4-221-816-01	BELT (CDM55)	
262	4-221-916-01	BUSHING	
263	A-4672-773-A	PULLEY (AT) ASSY	
264	4-985-672-01	SCREW (+PTPWHM2.6), FLOATING	
265	4-220-233-01	CAM(CDM55)	
266	4-959-996-01	SPRING (932), COMPRESSION	
267	A-4672-772-A	HOLDER (BU) ASSY	
M103	A-4672-771-A	MOTOR (LD) ASSY	

7-7. CD MECHANISM DECK SECTION-2 (BU-5SBD32)



Ref. No.	Part No.	Description	Remark
301	4-951-620-01	SCREW (2.6X8), +BVTP	
* 302	A-4724-375-A	BD (CD) BOARD, COMPLETE	
303	4-917-565-01	SHAFT, SLED	
304	4-951-940-01	INSULATOR (BU)	
⚠305	8-848-379-31	OPTICAL PICK-UP KSS-213BA/F-NP	
306	1-769-069-11	WIRE (FLAT TYPE) (16 CORE)	
307	4-917-567-01	GEAR (M)	
308	4-917-564-01	GEAR (P), FLATNESS	
M101	X-4917-523-3	BASE (OUTSART) ASSY (SPINDLE)	
M102	A-4917-504-1	MOTOR ASSY (SLED)	

以阴影和⚠标志来识别的零部件在安全方面具有关键性。因此只能以规定号码的零部件来更换。

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

AMP

SECTION 8
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
  uF: µF
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- COILS
  uH: µH
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... ,
  uPB... , µPB... , uPC... , µPC... ,
  uPD..., µPD...

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

以阴影和⚠标志来识别的零部件在安全方面具有关键性。因此只能以规定号码的零部件来更换。

- Abbreviation
  HK : HongKong model

Ref. No.	Part No.	Description				Remarks
	A-4426-951-A	AMP BOARD, COMPLETE				
		**********				
	1-533-293-11	FUSE HOLDER				
		< CAPACITOR >				
C801	1-126-048-81	ELECT	10uF	20.00%	50V	
C802	1-162-286-31	CERAMIC	220PF	10%	50V	
C803	1-126-964-11	ELECT	10uF	20.00%	50V	
C804	1-162-288-31	CERAMIC	330PF	10%	50V	
C805	1-126-051-11	ELECT	47uF	20.00%	50V	
C806	1-126-051-11	ELECT	47uF	20.00%	50V	
C807	1-136-495-11	MYLAR	0.068uF	5.00%	50V	
C808	1-136-495-11	MYLAR	0.068uF	5.00%	50V	
C821	1-126-965-11	ELECT	22uF	20.00%	50V	
C822	1-126-052-11	ELECT	100uF	20.00%	35V	
C823	1-136-165-00	MYLAR	0.1uF	5.00%	50V	
C824	1-164-159-11	CERAMIC	0.1uF		50V	
C831	1-126-052-11	ELECT	100uF	20.00%	35V	
C832	1-136-165-00	MYLAR	0.1uF	5.00%	50V	
C833	1-126-042-11	ELECT	3300uF	20.00%	35V	
C834	1-136-165-00	MYLAR	0.1uF	5.00%	50V	
C835	1-126-042-11	ELECT	3300uF	20.00%	35V	
C836	1-136-165-00	MYLAR	0.1uF	5.00%	50V	
C841	1-126-960-11	ELECT	1uF	20.00%	50V	
C851	1-126-048-81	ELECT	10uF	20.00%	50V	
C852	1-162-286-31	CERAMIC	220PF	10%	50V	
C853	1-126-964-11	ELECT	10uF	20.00%	50V	
C854	1-162-288-31	CERAMIC	330PF	10%	50V	
C855	1-126-051-11	ELECT	47uF	20.00%	50V	
C856	1-126-051-11	ELECT	47uF	20.00%	50V	
C857	1-136-495-11	MYLAR	0.068uF	5.00%	50V	
C858	1-136-495-11	MYLAR	0.068uF	5.00%	50V	
C871	1-126-933-11	ELECT	100uF	20.00%	16V	
C881	1-126-959-11	ELECT	0.47uF	20.00%	50V	
C882	1-136-495-11	MYLAR	0.068uF	5.00%	50V	
C883	1-136-495-11	MYLAR	0.068uF	5.00%	50V	
C884	1-136-495-11	MYLAR	0.068uF	5.00%	50V	
C885	1-136-495-11	MYLAR	0.068uF	5.00%	50V	
		< CONNECTOR >				
* CN802	1-564-506-11	PLUG, CONNECTOR 3P				
* CN882	1-564-515-11	PLUG, CONNECTOR 12P				
		< DIODE >				
D801	8-719-911-19	DIODE 1SS133T-72				
D802	8-719-911-19	DIODE 1SS133T-72				
D832	8-719-028-23	DIODE D3SBA20-4101				
D851	8-719-911-19	DIODE 1SS133T-72				
D852	8-719-911-19	DIODE 1SS133T-72				
D881	8-719-911-19	DIODE 1SS133T-72				
D882	8-719-911-19	DIODE 1SS133T-72				
		< FUSE >				
⚠F801	1-532-504-31	FUSE 4A/125V				
⚠F802	1-532-504-31	FUSE 4A/125V				
		< IC >				
IC801	8-749-920-13	IC STK4132MK2				
		< COIL >				
L881	1-420-872-00	COIL, AIR-CORE				
L882	1-420-872-00	COIL, AIR-CORE				
		< TRANSISTOR >				
Q801	8-729-044-08	TRANSISTOR	2SD1915(F)-T(TA).SO			
Q802	8-729-620-05	TRANSISTOR	2SC2603TP-EF			
Q841	8-729-900-80	TRANSISTOR	UN4211-TA			
Q851	8-729-044-08	TRANSISTOR	2SD1915(F)-T(TA).SO			
Q852	8-729-620-05	TRANSISTOR	2SC2603TP-EF			
Q871	8-729-119-76	TRANSISTOR	2SA1115TP-EF			
Q872	8-729-620-05	TRANSISTOR	2SC2603TP-EF			
Q873	8-729-620-05	TRANSISTOR	2SC2603TP-EF			
Q881	8-729-111-29	TRANSISTOR	2SD1616-TP-K			
		< RESISTOR >				
R801	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R802	1-249-429-11	CARBON	10K	5%	1/4W	
R803	1-249-437-11	CARBON	47K	5%	1/4W	
R804	1-249-437-11	CARBON	47K	5%	1/4W	
R805	1-249-417-11	CARBON	1K	5%	1/4W	F
R806	1-249-437-11	CARBON	47K	5%	1/4W	
R807	1-260-103-11	CARBON	2.2K	5%	1/2W	
R808	1-260-103-11	CARBON	2.2K	5%	1/2W	
⚠R809	1-217-151-00	METAL	0.22	10%	2W	
R810	1-249-417-11	CARBON	1K	5%	1/4W	F
R811	1-249-431-11	CARBON	15K	5%	1/4W	
R812	1-260-076-11	CARBON	10	5%	1/2W	
⚠R820	1-219-153-11	FUSIBLE	10	5%	1/4W	
⚠R821	1-212-881-11	FUSIBLE	100	5%	1/4W	
R822	1-260-099-11	CARBON	1K	5%	1/2W	
R823	1-260-099-11	CARBON	1K	5%	1/2W	
R824	1-249-441-11	CARBON	100K	5%	1/4W	
R825	1-249-433-11	CARBON	22K	5%	1/4W	
⚠R831	1-212-881-11	FUSIBLE	100	5%	1/4W	
R841	1-249-437-11	CARBON	47K	5%	1/4W	

Ref. No.	Part No.	Description			Remarks
R842	1-249-437-11	CARBON	47K	5%	1/4W
R843	1-249-441-11	CARBON	100K	5%	1/4W
R844	1-247-807-31	CARBON	100	5%	1/4W
R845	1-249-441-11	CARBON	100K	5%	1/4W
R851	1-249-421-11	CARBON	2.2K	5%	1/4W F
R852	1-249-429-11	CARBON	10K	5%	1/4W
R853	1-249-437-11	CARBON	47K	5%	1/4W
R854	1-249-437-11	CARBON	47K	5%	1/4W
R855	1-249-417-11	CARBON	1K	5%	1/4W F
R856	1-249-437-11	CARBON	47K	5%	1/4W
R857	1-260-103-11	CARBON	2.2K	5%	1/2W
R858	1-260-103-11	CARBON	2.2K	5%	1/2W
⚠R859	1-217-151-00	METAL	0.22	10%	2W
R860	1-249-417-11	CARBON	1K	5%	1/4W F
R861	1-249-431-11	CARBON	15K	5%	1/4W
R862	1-260-076-11	CARBON	10	5%	1/2W
R871	1-249-441-11	CARBON	100K	5%	1/4W
R872	1-249-429-11	CARBON	10K	5%	1/4W
R873	1-249-439-11	CARBON	68K	5%	1/4W
R874	1-249-437-11	CARBON	47K	5%	1/4W
R881	1-215-864-00	METAL OXIDE	150	5%	1W
R882	1-215-864-00	METAL OXIDE	150	5%	1W
R883	1-215-864-00	METAL OXIDE	150	5%	1W
R884	1-215-864-00	METAL OXIDE	150	5%	1W
R885	1-247-903-00	CARBON	1M	5%	1/4W
R886	1-249-431-11	CARBON	15K	5%	1/4W
R887	1-249-431-11	CARBON	15K	5%	1/4W
R888	1-249-421-11	CARBON	2.2K	5%	1/4W F
R889	1-247-843-11	CARBON	3.3K	5%	1/4W
R890	1-249-429-11	CARBON	10K	5%	1/4W
⚠R891	1-216-454-11	METAL OXIDE	390	5%	2W
R892	1-260-076-11	CARBON	10	5%	1/2W
R893	1-260-076-11	CARBON	10	5%	1/2W
R894	1-260-076-11	CARBON	10	5%	1/2W
R895	1-260-076-11	CARBON	10	5%	1/2W
⚠R896	1-216-454-11	METAL OXIDE	390	5%	2W
		< RELAY >			
RY881	1-755-170-11	RELAY (12V)			
		< TERMINAL >			
TB881	1-694-476-11	TERMINAL BOARD			
**********					
*	A-4699-893-A	BD(MD) BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-125-822-11	TANTALUM	10uF	20.00%	10V
C102	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C103	1-125-822-11	TANTALUM	10uF	20.00%	10V
C104	1-125-822-11	TANTALUM	10uF	20.00%	10V
C105	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
C106	1-163-275-11	CERAMIC CHIP	0.001uF	5.00%	50V
C107	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C108	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C109	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C111	1-164-344-11	CERAMIC CHIP	0.068uF	10.00%	25V

Ref. No.	Part No.	Description			Remarks
C112	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C113	1-109-982-11	CERAMIC CHIP	1uF	10.00%	10V
C115	1-164-489-11	CERAMIC CHIP	0.22uF	10.00%	16V
C116	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C117	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C118	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C119	1-125-822-11	TANTALUM	10uF	20.00%	10V
C121	1-125-822-11	TANTALUM	10uF	20.00%	10V
C122	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
C123	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C124	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C127	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C128	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
C129	1-107-823-11	CERAMIC CHIP	0.47uF	10.00%	16V
C130	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C131	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C132	1-107-823-11	CERAMIC CHIP	0.47uF	10.00%	16V
C133	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C134	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C135	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C136	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C142	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C143	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C144	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C146	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C151	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C152	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C153	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
C156	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C158	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C160	1-104-601-11	ELECT CHIP	10uF	20.00%	10V
C161	1-104-601-11	ELECT CHIP	10uF	20.00%	10V
C163	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
C164	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
C167	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C168	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C169	1-125-822-11	TANTALUM	10uF	20.00%	10V
C171	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C181	1-104-913-11	TANTAL. CHIP	10uF	20.00%	16V
C183	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C184	1-117-970-11	ELECT CHIP	22uF	20.00%	10V
C185	1-164-611-11	CERAMIC CHIP	0.001uF	10.00%	500V
C187	1-104-913-11	TANTAL. CHIP	10uF	20.00%	16V
C188	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
C189	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C190	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C191	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C196	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C197	1-163-038-91	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
CN101	1-569-479-21	CONNECTOR, FPC 21P			
CN102	1-784-833-21	CONNECTOR,FFC(LIF(NON-ZIF))21P			
CN103	1-784-834-21	CONNECTOR,FFC(LIF(NON-ZIF))23P			
CN104	1-770-687-11	CONNECTOR, FFC/FPC 4P			
CN110	1-695-440-21	PIN, CONNECTOR (PC BOARD) 6P			

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Replace only with part number specified.

以阴影和 ⚠ 标志来识别的零部件，在安全方面具有关键性，因此只能以规定号码的零部件来更换。

BD (MD)

Ref. No.	Part No.	Description			Remarks
		< DIODE >			
D101	8-719-988-61	DIODE 1SS355TE-17			
D181	8-719-046-86	DIODE F1J6TP			
D183	8-719-046-86	DIODE F1J6TP			
		< IC >			
IC101	8-752-080-95	IC CXA2523AR			
IC103	8-729-903-10	TRANSISTOR FMW1-T-148			
IC121	8-752-389-44	IC CXD2654R			
IC123	8-759-096-87	IC TC7WU04FU(TE12R)			
IC124	8-759-498-44	IC MSM51V4400-70TS-K			
IC124	8-759-334-38	IC MN41V4400TT-08			
IC152	8-759-430-25	IC BH6511FS-E2			
IC171	8-759-487-04	IC BR24C02F-E2			
IC181	8-759-481-17	IC MC74ACT08DTR2			
IC192	8-759-460-72	IC BA033FP-E2			
		< COIL >			
L101	1-414-813-11	FERRITE	0uH		
L102	1-414-813-11	FERRITE	0uH		
L103	1-414-813-11	FERRITE	0uH		
L105	1-414-813-11	FERRITE	0uH		
L106	1-414-813-11	FERRITE	0uH		
L121	1-414-813-11	FERRITE	0uH		
L122	1-414-813-11	FERRITE	0uH		
L151	1-412-029-11	INDUCTOR CHIP	10uH		
L152	1-412-029-11	INDUCTOR CHIP	10uH		
L153	1-412-032-11	INDUCTOR CHIP	100uH		
L154	1-412-032-11	INDUCTOR CHIP	100uH		
L161	1-414-813-11	FERRITE	0uH		
L162	1-414-813-11	FERRITE	0uH		
L181	1-216-295-91	SHORT	0		
		< TRANSISTOR >			
Q101	8-729-403-35	TRANSISTOR	RN2304-TE85L		
Q102	8-729-026-53	TRANSISTOR	2SA1576A-T106-QR		
Q103	8-729-028-99	TRANSISTOR	RN1307-TE85L		
Q104	8-729-028-99	TRANSISTOR	RN1307-TE85L		
Q162	8-729-101-07	TRANSISTOR	2SB798-T1DK		
Q163	8-729-403-35	TRANSISTOR	RN2304-TE85L		
Q181	8-729-018-75	TRANSISTOR	2SJ278MYTR		
Q182	8-729-017-65	TRANSISTOR	2SK1764KYTR		
		< RESISTOR >			
R103	1-216-049-91	RES-CHIP	1K	5%	1/10W
R104	1-216-073-00	METAL CHIP	10K	5%	1/10W
R105	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R106	1-216-133-00	METAL CHIP	3.3M	5%	1/10W
R107	1-216-113-00	METAL CHIP	470K	5%	1/10W
R109	1-216-295-91	SHORT	0		
R110	1-216-073-00	METAL CHIP	10K	5%	1/10W
R111	1-216-295-91	SHORT	0		
R112	1-216-089-91	RES-CHIP	47K	5%	1/10W
R113	1-216-049-91	RES-CHIP	1K	5%	1/10W
R115	1-216-049-91	RES-CHIP	1K	5%	1/10W
R117	1-216-113-00	METAL CHIP	470K	5%	1/10W
R120	1-216-025-91	RES-CHIP	100	5%	1/10W
R121	1-216-097-91	RES-CHIP	100K	5%	1/10W
R123	1-216-295-91	SHORT	0		

Ref. No.	Part No.	Description			Remarks
R124	1-216-025-91	RES-CHIP	100	5%	1/10W
R125	1-216-025-91	RES-CHIP	100	5%	1/10W
R127	1-216-025-91	RES-CHIP	100	5%	1/10W
R129	1-216-295-91	SHORT	0		
R130	1-216-295-91	SHORT	0		
R131	1-216-073-00	METAL CHIP	10K	5%	1/10W
R132	1-216-097-91	RES-CHIP	100K	5%	1/10W
R133	1-216-117-00	METAL CHIP	680K	5%	1/10W
R134	1-216-049-91	RES-CHIP	1K	5%	1/10W
R135	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R136	1-216-049-91	RES-CHIP	1K	5%	1/10W
R137	1-216-295-91	SHORT	0		
R140	1-216-029-00	METAL CHIP	150	5%	1/10W
R142	1-216-073-00	METAL CHIP	10K	5%	1/10W
R143	1-216-073-00	METAL CHIP	10K	5%	1/10W
R144	1-216-025-91	RES-CHIP	100	5%	1/10W
R145	1-216-073-00	METAL CHIP	10K	5%	1/10W
R146	1-216-037-00	METAL CHIP	330	5%	1/10W
R147	1-216-025-91	RES-CHIP	100	5%	1/10W
R148	1-216-045-00	METAL CHIP	680	5%	1/10W
R149	1-216-073-00	METAL CHIP	10K	5%	1/10W
R150	1-216-295-91	SHORT	0		
R151	1-216-073-00	METAL CHIP	10K	5%	1/10W
R152	1-216-073-00	METAL CHIP	10K	5%	1/10W
R158	1-216-097-91	RES-CHIP	100K	5%	1/10W
R159	1-216-097-91	RES-CHIP	100K	5%	1/10W
R160	1-216-295-91	SHORT	0		
R161	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R162	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R163	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R164	1-216-045-00	METAL CHIP	680	5%	1/10W
R165	1-216-097-91	RES-CHIP	100K	5%	1/10W
R167	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R169	1-219-724-11	METAL CHIP	1	1%	1/4W
R170	1-216-073-00	METAL CHIP	10K	5%	1/10W
R171	1-216-073-00	METAL CHIP	10K	5%	1/10W
R173	1-216-121-91	RES-CHIP	1M	5%	1/10W
R175	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R177	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R179	1-216-085-00	METAL CHIP	33K	5%	1/10W
R180	1-216-073-00	METAL CHIP	10K	5%	1/10W
R182	1-216-089-91	RES-CHIP	47K	5%	1/10W
R183	1-216-089-91	RES-CHIP	47K	5%	1/10W
R184	1-216-073-00	METAL CHIP	10K	5%	1/10W
R185	1-216-081-00	METAL CHIP	22K	5%	1/10W
R186	1-216-089-91	RES-CHIP	47K	5%	1/10W
R188	1-216-073-00	METAL CHIP	10K	5%	1/10W
R189	1-216-073-00	METAL CHIP	10K	5%	1/10W
R190	1-216-073-00	METAL CHIP	10K	5%	1/10W
R195	1-216-073-00	METAL CHIP	10K	5%	1/10W
R196	1-216-295-91	SHORT	0		
R197	1-216-295-91	SHORT	0		
R198	1-216-286-00	RES-CHIP	4.7M	5%	1/8W
R198	1-216-296-91	SHORT	0		
		< SWITCH >			
S101	1-762-596-21	SWITCH, PUSH (1 KEY)(LIMIT IN)			

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Ref. No.	Part No.	Description			Remarks
	1-674-336-11	LOADING BOARD			
		**********			
		< CONNECTOR >			
* CN151	1-568-943-11	PIN, CONNECTOR 5P			
		< SWITCH >			
S1	1-771-799-11	SWITCH, LEVER (SLIDE) (LOADING SWITCH)			
**********					
	A-4428-956-A	MAIN BOARD, COMPLETE (HK)			
		**********			
	A-4473-393-A	MAIN BOARD, COMPLETE (EXCEPT HK)			
		**********			
	7-685-871-01	SCREW+BVTT	3X6 (S)		
		< CAPACITOR >			
C113	1-126-964-11	ELECT	10uF	20.00%	50V
C132	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V (HK)
C132	1-163-038-11	CERAMIC CHIP	0.1uF		25V (EXCEPT HK)
C142	1-126-933-11	ELECT	100uF	20.00%	16V
C143	1-126-933-11	ELECT	100uF	20.00%	16V
C144	1-126-964-11	ELECT	10uF	20.00%	50V
C163	1-126-964-11	ELECT	10uF	20.00%	50V
C194	1-126-964-11	ELECT	10uF	20.00%	50V
C201	1-128-835-91	ELECT	1000uF	20%	10V
C202	1-128-834-11	ELECT	470uF	20%	10V
C203	1-128-834-11	ELECT	470uF	20%	10V
C204	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C205	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C206	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C207	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V (HK)
C211	1-164-159-11	CERAMIC	0.1uF		50V
C213	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C223	1-126-964-11	ELECT	10uF	20.00%	50V
C232	1-126-933-11	ELECT	100uF	20.00%	16V (EXCEPT HK)
C237	1-126-961-11	ELECT	2.2uF	20.00%	50V (EXCEPT HK)
C238	1-163-001-11	CERAMIC CHIP	220PF	10%	50V (EXCEPT HK)
C240	1-163-006-11	CERAMIC CHIP	560PF	10.00%	50V (EXCEPT HK)
C241	1-163-239-11	CERAMIC CHIP	33PF	5.00%	50V (EXCEPT HK)
C242	1-163-239-11	CERAMIC CHIP	33PF	5.00%	50V (EXCEPT HK)
C244	1-126-933-11	ELECT	100uF	20.00%	16V (EXCEPT HK)
C302	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C303	1-119-821-11	ELECT MELF	2.2uF	20%	50V
C304	1-130-475-00	MYLAR	0.0022uF	5%	50V
C305	1-126-045-11	ELECT	2.2uF	20.00%	50V
C306	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V

Ref. No.	Part No.	Description			Remarks
C307	1-119-821-11	ELECT MELF	2.2uF	20%	50V
C308	1-119-821-11	ELECT MELF	2.2uF	20%	50V
C309	1-162-282-31	CERAMIC	100PF	10%	50V
C310	1-119-821-11	ELECT MELF	2.2uF	20%	50V
C311	1-126-048-81	ELECT	10uF	20.00%	50V
C312	1-136-165-00	MYLAR	0.1uF	5.00%	50V
C313	1-126-957-11	ELECT	0.22uF	20.00%	50V
C314	1-130-473-00	MYLAR	0.0015uF	5%	50V
C315	1-126-048-81	ELECT	10uF	20.00%	50V
C316	1-136-165-00	MYLAR	0.1uF	5.00%	50V
C317	1-136-165-00	MYLAR	0.1uF	5.00%	50V
C322	1-126-964-11	ELECT	10uF	20.00%	50V
C323	1-126-048-81	ELECT	10uF	20.00%	50V
C324	1-124-994-11	ELECT	100uF	20.00%	10V
C325	1-130-477-00	MYLAR	0.0033uF	5%	50V
C326	1-162-286-31	CERAMIC	220PF	10%	50V
C352	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C353	1-119-821-11	ELECT MELF	2.2uF	20%	50V
C354	1-130-475-00	MYLAR	0.0022uF	5%	50V
C355	1-126-045-11	ELECT	2.2uF	20.00%	50V
C356	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C357	1-119-821-11	ELECT MELF	2.2uF	20%	50V
C358	1-119-821-11	ELECT MELF	2.2uF	20%	50V
C359	1-162-282-31	CERAMIC	100PF	10%	50V
C360	1-119-821-11	ELECT MELF	2.2uF	20%	50V
C361	1-126-048-81	ELECT	10uF	20.00%	50V
C362	1-136-165-00	MYLAR	0.1uF	5.00%	50V
C363	1-126-957-11	ELECT	0.22uF	20.00%	50V
C364	1-130-473-00	MYLAR	0.0015uF	5%	50V
C365	1-126-048-81	ELECT	10uF	20.00%	50V
C366	1-136-165-00	MYLAR	0.1uF	5.00%	50V
C367	1-136-165-00	MYLAR	0.1uF	5.00%	50V
C501	1-163-233-11	CERAMIC CHIP	18PF	5.00%	50V
C502	1-163-233-11	CERAMIC CHIP	18PF	5.00%	50V
C503	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C504	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C505	1-164-159-11	CERAMIC	0.1uF		50V
C506	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C507	1-126-933-11	ELECT	100uF	20.00%	16V
C508	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C521	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C901	1-126-964-11	ELECT	10uF	20.00%	50V
C902	1-126-935-11	ELECT	470uF	20.00%	16V
C903	1-126-964-11	ELECT	10uF	20.00%	50V
C904	1-104-665-11	ELECT	100uF	20.00%	10V
C905	1-126-964-11	ELECT	10uF	20.00%	50V
C906	1-126-767-11	ELECT	1000uF	20.00%	16V
C907	1-126-964-11	ELECT	10uF	20.00%	50V
C908	1-104-665-11	ELECT	100uF	20.00%	10V
C909	1-126-964-11	ELECT	10uF	20.00%	50V
C910	1-128-834-11	ELECT	470uF	20%	10V
C911	1-126-964-11	ELECT	10uF	20.00%	50V
C912	1-126-916-11	ELECT	1000uF	20.00%	6.3V
C913	1-126-964-11	ELECT	10uF	20.00%	50V
C914	1-126-916-11	ELECT	1000uF	20.00%	6.3V

MAIN

Ref. No.	Part No.	Description			Remarks
C915	1-126-964-11	ELECT	10uF	20.00%	50V
C916	1-126-935-11	ELECT	470uF	20.00%	6.3V
C917	1-128-834-11	ELECT	470uF	20%	10V
C918	1-104-665-11	ELECT	100uF	20.00%	10V
C919	1-104-665-11	ELECT	100uF	20.00%	10V
C931	1-126-933-11	ELECT	100uF	20.00%	16V
C932	1-126-960-11	ELECT	1uF	20.00%	50V
C933	1-164-159-11	CERAMIC	0.1uF		50V
C934	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
C941	1-126-947-11	ELECT	47uF	20.00%	35V
C942	1-164-159-11	CERAMIC	0.1uF		50V
C943	1-164-159-11	CERAMIC	0.1uF		50V
C945	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C946	1-126-960-11	ELECT	1uF	20.00%	50V
		< CONNECTOR >			
* CN101	1-564-516-11	PLUG, CONNECTOR 13P			
CN102	1-784-796-11	CONNECTOR, FFC 35P			
* CN103	1-568-954-11	PIN, CONNECTOR 5P			
CN104	1-691-650-11	SOCKET, CONNECTOR 19P			
CN105	1-784-786-11	CONNECTOR, FFC 25P			
CN106	1-784-747-11	CONNECTOR, FFC 25P			
* CN107	1-564-515-11	PLUG, CONNECTOR 12P			
CN108	1-784-776-11	CONNECTOR, FFC 15P			
		< DIODE >			
D211	8-719-921-40	DIODE MTZJ-T-72-4.7B			
D221	8-719-109-85	DIODE MTZJ-T-72-5.1B			
D301	8-719-109-85	DIODE MTZJ-T-72-5.1B			
D302	8-719-911-19	DIODE 1SS133T-72			
D904	8-719-911-19	DIODE 1SS133T-72			
D905	8-719-911-19	DIODE 1SS133T-72			
D906	8-719-911-19	DIODE 1SS133T-72			
D908	8-719-200-82	DIODE 11ES2-TA2B			
D909	8-719-911-19	DIODE 1SS133T-72			
D910	8-719-911-19	DIODE 1SS133T-72			
D911	8-719-911-19	DIODE 1SS133T-72			
D941	8-719-911-19	DIODE 1SS133T-72			
D942	8-719-911-19	DIODE 1SS133T-72			
D943	8-719-911-19	DIODE 1SS133T-72			
D944	8-719-911-19	DIODE 1SS133T-72			
D945	8-719-911-19	DIODE 1SS133T-72			
D946	8-719-911-19	DIODE 1SS133T-72			
D947	8-719-911-19	DIODE 1SS133T-72			
D207	8-719-911-19	DIODE 1SS133T-72 (EXCEPT HK)			
D208	8-719-911-19	DIODE 1SS133T-72 (EXCEPT HK)			
		< TERMINAL >			
EPT901	1-537-770-21	TERMINAL BOARD, GROUND			
		< IC >			
IC211	8-759-822-09	IC LB1641			
IC231	8-759-560-51	IC BU1924F (EXCEPT HK)			
IC301	8-759-494-40	IC M62428AFP600C			
IC302	8-759-009-06	IC MC14052BF-T1			
IC501	8-759-647-26	IC M30620MC-A18FP			
IC901	8-759-394-35	IC BA12T			
IC902	8-759-604-90	IC M5F7907L			
IC903	8-759-701-79	IC NJM7812FA			
IC904	8-759-450-49	IC BA07T			

Ref. No.	Part No.	Description			Remarks
IC905	8-759-701-75	IC NJM7805FA			
IC906	8-759-701-75	IC NJM7805FA			
IC907	8-759-701-75	IC NJM7805FA			
IC908	8-759-647-11	IC uPC2905HF			
IC909	8-759-071-48	IC TA7807S			
IC931	8-759-481-02	IC M62016L			
IC941	8-759-637-58	IC PST592C-T			
		< JUMPER RESISTOR >			
JR131	1-216-295-91	SHORT	0		
		< COIL >			
L132	1-216-295-91	SHORT	0		
L141	1-408-117-00	INDUCTOR	10uH		
L202	1-410-521-11	INDUCTOR	100uH		
		< TRANSISTOR >			
Q231	8-729-120-28	TRANSISTOR	2SC1623-T1-L5L6		(EXCEPT HK)
Q301	8-729-620-05	TRANSISTOR	2SC2603TP-EF		
Q351	8-729-620-05	TRANSISTOR	2SC2603TP-EF		
Q542	8-729-422-73	TRANSISTOR	UN4212-TA		
Q551	8-729-424-59	TRANSISTOR	UN2212-TX		
Q552	8-729-424-12	TRANSISTOR	UN2112-TX		
Q902	8-729-118-01	TRANSISTOR	2SB1014TP-34		
Q903	8-729-422-73	TRANSISTOR	UN4212-TA		
Q904	8-729-620-05	TRANSISTOR	2SC2603TP-EF		
Q908	8-729-620-05	TRANSISTOR	2SC2603TP-EF		
Q931	8-729-620-05	TRANSISTOR	2SC2603TP-EF		
Q932	8-729-422-73	TRANSISTOR	UN4212-TA		
Q941	8-729-620-05	TRANSISTOR	2SC2603TP-EF		
Q942	8-729-900-63	TRANSISTOR	UN4112-TA		
		< RESISTOR >			
R112	1-249-417-11	CARBON	1K	5%	1/4W F
R132	1-247-807-31	CARBON	100	5%	1/4W
R162	1-249-417-11	CARBON	1K	5%	1/4W F
R212	1-249-409-11	CARBON	220	5%	1/4W F
R213	1-249-414-11	CARBON	560	5%	1/4W F
R221	1-249-412-11	CARBON	390	5%	1/4W F
R230	1-249-417-11	CARBON	1K	5%	1/4W F (EXCEPT HK)
R231	1-216-295-91	SHORT	0	(EXCEPT HK)	
R232	1-216-073-00	METAL CHIP	10K	5%	1/10W (EXCEPT HK)
R233	1-216-049-91	RES-CHIP	1K	5%	1/10W (EXCEPT HK)
R236	1-216-295-91	SHORT	0	(EXCEPT HK)	
R237	1-216-295-91	SHORT	0	(EXCEPT HK)	
R238	1-216-049-91	RES-CHIP	1K	5%	1/10W (EXCEPT HK)
R240	1-216-129-00	METAL CHIP	2.2M	5%	1/10W (EXCEPT HK)
R302	1-249-431-11	CARBON	15K	5%	1/4W
R303	1-216-097-91	RES-CHIP	100K	5%	1/10W
R304	1-249-417-11	CARBON	1K	5%	1/4W F
R306	1-216-049-91	RES-CHIP	1K	5%	1/10W
R307	1-249-417-11	CARBON	1K	5%	1/4W F
R308	1-249-441-11	CARBON	100K	5%	1/4W

Ref. No.	Part No.	Description			Remarks
R310	1-249-441-11	CARBON	100K	5%	1/4W
R312	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R313	1-216-103-00	METAL CHIP	180K	5%	1/10W
R314	1-216-081-00	METAL CHIP	22K	5%	1/10W
R315	1-216-121-91	RES-CHIP	1M	5%	1/10W
R316	1-249-441-11	CARBON	100K	5%	1/4W
R321	1-249-435-11	CARBON	33K	5%	1/4W
R322	1-247-903-00	CARBON	1M	5%	1/4W
R323	1-249-417-11	CARBON	1K	5%	1/4W F
R324	1-249-417-11	CARBON	1K	5%	1/4W F
R325	1-249-417-11	CARBON	1K	5%	1/4W F
R326	1-249-413-11	CARBON	470	5%	1/4W F
R352	1-249-431-11	CARBON	15K	5%	1/4W
R353	1-216-097-91	RES-CHIP	100K	5%	1/10W
R354	1-249-417-11	CARBON	1K	5%	1/4W F
R356	1-216-049-91	RES-CHIP	1K	5%	1/10W
R357	1-249-417-11	CARBON	1K	5%	1/4W F
R358	1-249-441-11	CARBON	100K	5%	1/4W
R360	1-249-441-11	CARBON	100K	5%	1/4W
R362	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R363	1-216-103-00	METAL CHIP	180K	5%	1/10W
R364	1-216-081-00	METAL CHIP	22K	5%	1/10W
R365	1-216-121-91	RES-CHIP	1M	5%	1/10W
R366	1-249-441-11	CARBON	100K	5%	1/4W
R501	1-216-025-91	RES-CHIP	100	5%	1/10W
R502	1-216-049-91	RES-CHIP	1K	5%	1/10W
R504	1-216-049-91	RES-CHIP	1K	5%	1/10W
R505	1-249-439-11	CARBON	68K	5%	1/4W
R506	1-216-089-91	RES-CHIP	47K	5%	1/10W
R508	1-249-429-11	CARBON	10K	5%	1/4W
R509	1-216-041-00	METAL CHIP	470	5%	1/10W
R510	1-216-041-00	METAL CHIP	470	5%	1/10W
R511	1-247-843-11	CARBON	3.3K	5%	1/4W
R512	1-249-429-11	CARBON	10K	5%	1/4W
R513	1-249-429-11	CARBON	10K	5%	1/4W
R514	1-249-429-11	CARBON	10K	5%	1/4W
R515	1-249-429-11	CARBON	10K	5%	1/4W
R516	1-249-429-11	CARBON	10K	5%	1/4W
R517	1-249-429-11	CARBON	10K	5%	1/4W
R519	1-249-417-11	CARBON	1K	5%	1/4W F
R520	1-249-417-11	CARBON	1K	5%	1/4W F
R521	1-249-417-11	CARBON	1K	5%	1/4W F
R522	1-249-437-11	CARBON	47K	5%	1/4W
R523	1-216-049-91	RES-CHIP	1K	5%	1/10W
R524	1-249-417-11	CARBON	1K	5%	1/4W F
R525	1-249-417-11	CARBON	1K	5%	1/4W F
R526	1-249-417-11	CARBON	1K	5%	1/4W F
R527	1-249-417-11	CARBON	1K	5%	1/4W F
R528	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R529	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R530	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R531	1-249-441-11	CARBON	100K	5%	1/4W
R532	1-247-807-31	CARBON	100	5%	1/4W
R533	1-247-807-31	CARBON	100	5%	1/4W
R534	1-247-807-31	CARBON	100	5%	1/4W
R535	1-247-807-31	CARBON	100	5%	1/4W
R536	1-247-807-31	CARBON	100	5%	1/4W
R537	1-247-807-31	CARBON	100	5%	1/4W
R538	1-216-025-91	RES-CHIP	100	5%	1/10W
R539	1-249-417-11	CARBON	1K	5%	1/4W F

Ref. No.	Part No.	Description			Remarks
R540	1-216-049-91	RES-CHIP	1K	5%	1/10W
R541	1-216-049-91	RES-CHIP	1K	5%	1/10W
R542	1-249-417-11	CARBON	1K	5%	1/4W F
R543	1-247-807-31	CARBON	100	5%	1/4W
R544	1-216-049-91	RES-CHIP	1K	5%	1/10W
R547	1-247-807-31	CARBON	100	5%	1/4W
R548	1-247-807-31	CARBON	100	5%	1/4W
R549	1-247-807-31	CARBON	100	5%	1/4W
R550	1-249-417-11	CARBON	1K	5%	1/4W F
R551	1-216-049-91	RES-CHIP	1K	5%	1/10W
R552	1-216-025-91	RES-CHIP	100	5%	1/10W
R553	1-216-025-91	RES-CHIP	100	5%	1/10W
R554	1-216-049-91	RES-CHIP	1K	5%	1/10W
R555	1-216-025-91	RES-CHIP	100	5%	1/10W
R556	1-249-417-11	CARBON	1K	5%	1/4W F
R557	1-247-807-31	CARBON	100	5%	1/4W
R558	1-247-807-31	CARBON	100	5%	1/4W
R559	1-247-807-31	CARBON	100	5%	1/4W
R560	1-216-049-91	RES-CHIP	1K	5%	1/10W
R561	1-216-049-91	RES-CHIP	1K	5%	1/10W
R563	1-216-049-91	RES-CHIP	1K	5%	1/10W
R565	1-249-417-11	CARBON	1K	5%	1/4W F
R566	1-247-807-31	CARBON	100	5%	1/4W
R567	1-247-807-31	CARBON	100	5%	1/4W
R568	1-247-807-31	CARBON	100	5%	1/4W
R569	1-247-807-31	CARBON	100	5%	1/4W
R570	1-216-049-91	RES-CHIP	1K	5%	1/10W
R571	1-216-049-91	RES-CHIP	1K	5%	1/10W
R572	1-247-807-31	CARBON	100	5%	1/4W
R573	1-249-417-11	CARBON	1K	5%	1/4W F
R574	1-247-807-31	CARBON	100	5%	1/4W
R575	1-247-807-31	CARBON	100	5%	1/4W
R576	1-247-807-31	CARBON	100	5%	1/4W
R578	1-216-025-91	RES-CHIP	100	5%	1/10W
R579	1-216-025-91	RES-CHIP	100	5%	1/10W
R580	1-216-049-91	RES-CHIP	1K	5%	1/10W
R581	1-247-807-31	CARBON	100	5%	1/4W
R582	1-247-807-31	CARBON	100	5%	1/4W
R583	1-249-441-11	CARBON	100K	5%	1/4W (EXCEPT HK)
R583	1-249-417-11	CARBON	1K	5%	1/4W F (HK)
R584	1-249-441-11	CARBON	100K	5%	1/4W (EXCEPT HK)
R584	1-249-417-11	CARBON	1K	5%	1/4W F (HK)
R586	1-216-049-91	RES-CHIP	1K	5%	1/10W
R587	1-216-049-91	RES-CHIP	1K	5%	1/10W
R588	1-216-049-91	RES-CHIP	1K	5%	1/10W
R589	1-216-049-91	RES-CHIP	1K	5%	1/10W
R590	1-216-049-91	RES-CHIP	1K	5%	1/10W
R591	1-216-049-91	RES-CHIP	1K	5%	1/10W
R592	1-249-417-11	CARBON	1K	5%	1/4W F
R593	1-249-417-11	CARBON	1K	5%	1/4W F
R594	1-249-417-11	CARBON	1K	5%	1/4W F
R595	1-216-073-00	METAL CHIP	10K	5%	1/10W
R596	1-216-065-91	RES-CHIP	4.7K	5%	1/10W (EXCEPT HK)
R596	1-216-037-00	METAL CHIP	330	5%	1/10W (HK)
R597	1-216-045-00	METAL CHIP	680	5%	1/10W (EXCEPT HK)

MAIN | MD DIGITAL

Ref. No.	Part No.	Description			Remarks
R597	1-216-065-91	RES-CHIP	4.7K	5%	1/10W (HK)
R903	1-249-409-11	CARBON	220	5%	1/4W F
R904	1-249-413-11	CARBON	470	5%	1/4W F
R905	1-249-425-11	CARBON	4.7K	5%	1/4W F
R906	1-249-429-11	CARBON	10K	5%	1/4W
R907	1-249-433-11	CARBON	22K	5%	1/4W
R908	1-247-807-31	CARBON	100	5%	1/4W
R921	1-249-411-11	CARBON	330	5%	1/4W
R931	1-247-887-00	CARBON	220K	5%	1/4W
R932	1-249-441-11	CARBON	100K	5%	1/4W
R933	1-249-433-11	CARBON	22K	5%	1/4W
R941	1-249-413-11	CARBON	470	5%	1/4W F
R942	1-249-429-11	CARBON	10K	5%	1/4W
R943	1-249-437-11	CARBON	47K	5%	1/4W
R946	1-249-433-11	CARBON	22K	5%	1/4W
R947	1-249-437-11	CARBON	47K	5%	1/4W
R949	1-249-429-11	CARBON	10K	5%	1/4W
		< SWITCH >			
S901	1-762-871-11	SWITCH, KEYBOARD (RESET)			
		< VIBRATOR >			
X230	1-579-900-21	VIBRATOR, CRYSTAL (EXCEPT HK)			
X501	1-781-107-21	VIBRATOR, SERAMIC 16MHz			
X502	1-567-098-41	VIBRATOR, CRYSTAL 32.768KHz			
**********					
	A-4426-083-A	MD DIGITAL BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C171	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C172	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C201	1-163-234-11	CERAMIC CHIP	20PF	5.00%	50V
C202	1-163-229-11	CERAMIC CHIP	12PF	5.00%	50V
C203	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
C216	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C341	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C342	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C343	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C350	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C351	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C352	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C353	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C355	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C357	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
C358	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C359	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C360	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C362	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C363	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C503	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C509	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C510	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C522	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C527	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C528	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C529	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C2001	1-163-259-91	CERAMIC CHIP	220PF	5.00%	50V

Ref. No.	Part No.	Description			Remarks
		< CONNECTOR >			
CN101	1-793-311-11	CONNECTOR,FFC(LIF(NON-ZIF))25P			
CN102	1-784-687-41	PIN, CONNECTOR (PC BOARD) 7P			
CN103	1-784-834-21	CONNECTOR,FFC(LIF(NON-ZIF))23P			
CN104	1-784-833-21	CONNECTOR,FFC(LIF(NON-ZIF))21P			
		< IC >			
IC153	8-759-481-19	IC LB1830M-S-TE-L			
IC201	8-759-553-65	IC UDA1341TS			
IC202	8-759-564-53	IC MC74HCU04ADTR2			
IC316	8-759-657-09	IC M30624MG-A16FP			
		< COIL >			
L181	1-424-675-11	INDUCTOR	33uH		
L201	1-500-445-21	FERRITE	0uH		
L202	1-500-445-21	FERRITE	0uH		
		< TRANSISTOR >			
Q350	8-729-028-99	TRANSISTOR	RT1N144M-TP-1		
		< RESISTOR >			
R201	1-216-121-91	RES-CHIP	1M	5%	1/10W
R202	1-216-041-00	METAL CHIP	470	5%	1/10W
R203	1-216-049-91	RES-CHIP	1K	5%	1/10W
R204	1-216-089-91	RES-CHIP	47K	5%	1/10W
R205	1-216-113-00	METAL CHIP	470K	5%	1/10W
R207	1-216-025-91	RES-CHIP	100	5%	1/10W
R210	1-216-041-00	METAL CHIP	470	5%	1/10W
R330	1-216-073-00	METAL CHIP	10K	5%	1/10W
R331	1-216-097-91	RES-CHIP	100K	5%	1/10W
R333	1-216-073-00	METAL CHIP	10K	5%	1/10W
R349	1-216-073-00	METAL CHIP	10K	5%	1/10W
R351	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R352	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R353	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R358	1-216-073-00	METAL CHIP	10K	5%	1/10W
R361	1-216-073-00	METAL CHIP	10K	5%	1/10W
R363	1-216-073-00	METAL CHIP	10K	5%	1/10W
R366	1-216-097-91	RES-CHIP	100K	5%	1/10W
R367	1-216-097-91	RES-CHIP	100K	5%	1/10W
R370	1-216-073-00	METAL CHIP	10K	5%	1/10W
R383	1-216-073-00	METAL CHIP	10K	5%	1/10W
R384	1-216-073-00	METAL CHIP	10K	5%	1/10W
R385	1-216-073-00	METAL CHIP	10K	5%	1/10W
R386	1-216-073-00	METAL CHIP	10K	5%	1/10W
R391	1-216-073-00	METAL CHIP	10K	5%	1/10W
R395	1-216-073-00	METAL CHIP	10K	5%	1/10W
R400	1-216-073-00	METAL CHIP	10K	5%	1/10W
R816	1-216-174-00	RES-CHIP	100	5%	1/8W
R817	1-216-174-00	RES-CHIP	100	5%	1/8W
R818	1-216-174-00	RES-CHIP	100	5%	1/8W
R819	1-216-174-00	RES-CHIP	100	5%	1/8W
R2002	1-216-073-00	METAL CHIP	10K	5%	1/10W
R2004	1-216-041-00	METAL CHIP	470	5%	1/10W
R2005	1-216-025-91	RES-CHIP	100	5%	1/10W
R2006	1-216-025-91	RES-CHIP	100	5%	1/10W
R2007	1-216-025-91	RES-CHIP	100	5%	1/10W
R2008	1-216-073-00	METAL CHIP	10K	5%	1/10W
R2009	1-216-073-00	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description				Remarks
		< VIBRATOR >				
X201	1-767-286-11	VIBRATOR, CRYSTAL 22.5792MHz				
X302	1-781-155-21	VIBRATOR, CERAMIC 10MHz				
**********						
	A-4426-950-A	PANEL BOARD, COMPLETE				
		**********				
	4-221-103-01	HOLDER(FL)				
*	4-955-901-01	CUSHION (FL)				
		< CAPACITOR >				
C601	1-162-306-11	CERAMIC	0.01uF	30.00%	16V	
C602	1-162-306-11	CERAMIC	0.01uF	30.00%	16V	
C603	1-126-964-11	ELECT	10uF	20.00%	50V	
C610	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C611	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C623	1-162-306-11	CERAMIC	0.01uF	30.00%	16V	
C624	1-162-282-31	CERAMIC	100PF	10%	50V	
C635	1-126-795-11	ELECT	10uF	20.00%	50V	
C636	1-126-796-11	ELECT	22uF	20.00%	25V	
C640	1-162-282-31	CERAMIC	100PF	10%	50V	
C647	1-162-290-31	CERAMIC	470PF	10%	50V	
C648	1-162-286-31	CERAMIC	220PF	10%	50V	
C649	1-162-286-31	CERAMIC	220PF	10%	50V	
C650	1-162-286-31	CERAMIC	220PF	10%	50V	
C651	1-162-286-31	CERAMIC	220PF	10%	50V	
C652	1-162-286-31	CERAMIC	220PF	10%	50V	
C653	1-162-286-31	CERAMIC	220PF	10%	50V	
C654	1-162-286-31	CERAMIC	220PF	10%	50V	
C655	1-162-286-31	CERAMIC	220PF	10%	50V	
C656	1-162-286-31	CERAMIC	220PF	10%	50V	
C657	1-162-286-31	CERAMIC	220PF	10%	50V	
C658	1-162-286-31	CERAMIC	220PF	10%	50V	
C659	1-162-286-31	CERAMIC	220PF	10%	50V	
C660	1-162-286-31	CERAMIC	220PF	10%	50V	
C661	1-162-286-31	CERAMIC	220PF	10%	50V	
C662	1-162-286-31	CERAMIC	220PF	10%	50V	
C664	1-126-795-11	ELECT	10uF	20.00%	50V	
C665	1-126-786-11	ELECT	47uF	20.00%	16V	
C671	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C672	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C673	1-164-159-11	CERAMIC	0.1uF		50V	
C674	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C681	1-162-600-11	CERAMIC	0.0047uF	10.00%	16V	
C682	1-164-159-11	CERAMIC	0.1uF		50V	
C686	1-162-600-11	CERAMIC	0.0047uF	10.00%	16V	
C684	1-164-159-11	CERAMIC	0.1uF		50V (EXCEPT HK)	
		< CONNECTOR >				
CN601	1-784-757-11	CONNECTOR, FFC 35P				
CN602	1-564-718-11	CONNECTOR, PH-L 2P (EXCEPT HK)				
		< DIODE >				
D601	8-719-056-13	DIODE SML79423C-TP15 (MD ▷II)				
D602	8-719-058-04	DIODE SEL5223S-TP15 (● MD)				
D603	8-719-056-13	DIODE SML79423C-TP15 (CD ▷II)				
D604	8-719-058-04	DIODE SEL5223S-TP15 (POWER)				
D605	8-719-058-03	DIODE SEL5423E-TP15 (TAPE ▷)				
D606	8-719-058-03	DIODE SEL5423E-TP15 (TAPE ◁)				
D607	8-719-058-64	DIODE SEL5823A-TP15 (II TAPE)				
D608	8-719-058-04	DIODE SEL5223S-TP15 (● TAPE)				
D610	8-719-069-45	DIODE SELU5E23C-TP15 (MD ILUMINATION)				
D611	8-719-069-45	DIODE SELU5E23C-TP15 (MD ILUMINATION)				
		< FILTER >				
FL601	1-517-917-11	INDICATOR TUBE, FLUORESCENT				
		< IC >				
IC601	8-759-297-23	IC M66004M8FP				
IC602	8-759-459-85	IC NJL63H400A (REMOTE SENSOR)				
		< JACK >				
J601	1-764-106-21	JACK (PHONES)				
J602	1-764-106-21	JACK (LINE IN)				
		< TRANSISTOR >				
Q601	8-729-620-05	TRANSISTOR	2SC2603TP-EF			
Q602	8-729-620-05	TRANSISTOR	2SC2603TP-EF			
Q620	8-729-900-63	TRANSISTOR	UN4112-TA			
Q621	8-729-900-63	TRANSISTOR	UN4112-TA			
Q622	8-729-900-80	TRANSISTOR	UN4211-TA			
Q623	8-729-900-63	TRANSISTOR	UN4112-TA			
Q624	8-729-900-63	TRANSISTOR	UN4112-TA			
Q625	8-729-900-80	TRANSISTOR	UN4211-TA			
Q626	8-729-900-80	TRANSISTOR	UN4211-TA			
Q627	8-729-900-80	TRANSISTOR	UN4211-TA			
Q628	8-729-900-80	TRANSISTOR	UN4211-TA			
Q629	8-729-900-80	TRANSISTOR	UN4211-TA			
Q630	8-729-900-80	TRANSISTOR	UN4211-TA			
		< RESISTOR >				
R601	1-249-441-11	CARBON	100K	5%	1/4W	
R602	1-249-441-11	CARBON	100K	5%	1/4W	
R603	1-249-417-11	CARBON	1K	5%	1/4W	F
R604	1-249-417-11	CARBON	1K	5%	1/4W	F
R607	1-249-441-11	CARBON	100K	5%	1/4W	
R608	1-249-434-11	CARBON	27K	5%	1/4W	
R609	1-249-417-11	CARBON	1K	5%	1/4W	F
R610	1-249-417-11	CARBON	1K	5%	1/4W	F
R611	1-249-417-11	CARBON	1K	5%	1/4W	F
R612	1-249-417-11	CARBON	1K	5%	1/4W	F
R625	1-249-409-11	CARBON	220	5%	1/4W	F
R626	1-249-407-11	CARBON	150	5%	1/4W	F
R627	1-249-411-11	CARBON	330	5%	1/4W	
R628	1-249-409-11	CARBON	220	5%	1/4W	F
R629	1-249-407-11	CARBON	150	5%	1/4W	F
R630	1-249-411-11	CARBON	330	5%	1/4W	
R631	1-249-407-11	CARBON	150	5%	1/4W	F
R632	1-249-407-11	CARBON	150	5%	1/4W	F
R633	1-249-407-11	CARBON	150	5%	1/4W	F
R634	1-249-411-11	CARBON	330	5%	1/4W	
R636	1-249-409-11	CARBON	220	5%	1/4W	F
R637	1-249-409-11	CARBON	220	5%	1/4W	F
R639	1-249-393-11	CARBON	10	5%	1/4W	F
R640	1-249-415-11	CARBON	680	5%	1/4W	F
R641	1-249-417-11	CARBON	1K	5%	1/4W	F

PANEL SW TC

Ref. No.	Part No.	Description			Remarks
R642	1-249-419-11	CARBON	1.5K	5%	1/4W F
R643	1-249-415-11	CARBON	680	5%	1/4W F
R644	1-249-417-11	CARBON	1K	5%	1/4W F
R645	1-249-419-11	CARBON	1.5K	5%	1/4W F
R646	1-247-843-11	CARBON	3.3K	5%	1/4W
R647	1-249-425-11	CARBON	4.7K	5%	1/4W F
R648	1-249-429-11	CARBON	10K	5%	1/4W
R649	1-249-415-11	CARBON	680	5%	1/4W F
R650	1-249-417-11	CARBON	1K	5%	1/4W F
R651	1-249-419-11	CARBON	1.5K	5%	1/4W F
R652	1-247-843-11	CARBON	3.3K	5%	1/4W
R653	1-249-425-11	CARBON	4.7K	5%	1/4W F
R654	1-249-429-11	CARBON	10K	5%	1/4W
R655	1-249-435-11	CARBON	33K	5%	1/4W
R660	1-247-807-31	CARBON	100	5%	1/4W
R661	1-247-807-31	CARBON	100	5%	1/4W
R662	1-247-807-31	CARBON	100	5%	1/4W
R663	1-247-807-31	CARBON	100	5%	1/4W
R664	1-247-807-31	CARBON	100	5%	1/4W
R665	1-247-807-31	CARBON	100	5%	1/4W
R666	1-247-807-31	CARBON	100	5%	1/4W
R667	1-247-807-31	CARBON	100	5%	1/4W
R668	1-247-807-31	CARBON	100	5%	1/4W
R669	1-247-807-31	CARBON	100	5%	1/4W
R670	1-247-807-31	CARBON	100	5%	1/4W
R681	1-249-425-11	CARBON	4.7K	5%	1/4W F
R682	1-249-441-11	CARBON	100K	5%	1/4W
R686	1-249-425-11	CARBON	4.7K	5%	1/4W F
R687	1-249-441-11	CARBON	100K	5%	1/4W
		< SWITCH >			
S601	1-418-632-11	ENCODER, ROTARY (VOLUME)			
S602	1-762-875-21	SWITCH, KEYBOARD (POWER)			
S603	1-762-875-21	SWITCH, KEYBOARD (⏮◀◀)			
S604	1-762-875-21	SWITCH, KEYBOARD (▶▶▷▷⏭)			
S605	1-762-875-21	SWITCH, KEYBOARD (TUNER/BAND)			
S606	1-762-875-21	SWITCH, KEYBOARD (MD ⏏)			
S607	1-762-875-21	SWITCH, KEYBOARD (MD ▷II)			
S608	1-762-875-21	SWITCH, KEYBOARD (CD ▷II)			
S609	1-762-875-21	SWITCH, KEYBOARD (□)			
S610	1-762-875-21	SWITCH, KEYBOARD (ENTER/START)			
S611	1-762-875-21	SWITCH, KEYBOARD (SYNCHRO REC)			
S612	1-762-875-21	SWITCH, KEYBOARD (● MD)			
S613	1-762-875-21	SWITCH, KEYBOARD (CD ⏏)			
S614	1-762-875-21	SWITCH, KEYBOARD (FUNCION)			
S615	1-762-875-21	SWITCH, KEYBOARD (REPEAT/DOLBY NR)			
S616	1-762-875-21	SWITCH, KEYBOARD (PLAY MODE DIRECTION)			
S617	1-762-875-21	SWITCH, KEYBOARD (● TAPE)			
S618	1-762-875-21	SWITCH, KEYBOARD (□ TAPE)			
S619	1-762-875-21	SWITCH, KEYBOARD (TAPE ◁)			
S620	1-762-875-21	SWITCH, KEYBOARD (TAPE ▷)			
**********					
*	1-668-111-11	SW BOARD			
		*********			
		< CONNECTOR >			
* CN601	1-506-486-11	PIN, CONNECTOR 7P			

Ref. No.	Part No.	Description			Remarks
		< SWITCH >			
S601	1-572-126-21	SWITCH, PUSH (1 KEY) (REC POSITION)			
S602	1-572-126-21	SWITCH, PUSH (1 KEY) (PACK OUT)			
S604	1-771-264-11	SWITCH, PUSH(DETECTION)(1 KEY)			
**********					
	A-4426-954-A	TC BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C402	1-130-479-00	MYLAR	0.0047uF	5%	50V
C403	1-136-165-00	MYLAR	0.1uF	5.00%	50V
C404	1-136-165-00	MYLAR	0.1uF	5.00%	50V
C405	1-126-795-11	ELECT	10uF	20.00%	50V
C406	1-115-871-11	ELECT	1uF	20.00%	50V
C407	1-115-870-11	ELECT	0.47uF	20.00%	50V
C408	1-126-795-11	ELECT	10uF	20.00%	50V
C409	1-137-194-81	MYLAR	0.47uF	5.00%	50V
C410	1-162-290-31	CERAMIC	470PF	10%	50V
C411	1-126-795-11	ELECT	10uF	20.00%	50V
C412	1-115-870-11	ELECT	0.47uF	20.00%	50V
C413	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C414	1-126-795-11	ELECT	10uF	20.00%	50V
C415	1-126-794-11	ELECT	4.7uF	20.00%	50V
C416	1-126-382-11	ELECT	100uF	20.00%	10V
C417	1-126-382-11	ELECT	100uF	20.00%	10V
C420	1-162-290-31	CERAMIC	470PF	10%	50V
C431	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C432	1-126-382-11	ELECT	100uF	20.00%	10V
C433	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C435	1-130-483-00	MYLAR	0.01uF	5%	50V
C436	1-126-795-11	ELECT	10uF	20.00%	50V
C437	1-124-282-00	ELECT	22uF	20.00%	16V
C438	1-137-427-11	MYLAR	120PF	5.00%	50V
C439	1-162-288-31	CERAMIC	330PF	10%	50V
C440	1-162-209-31	CERAMIC	27PF	5.00%	50V
C452	1-130-479-00	MYLAR	0.0047uF	5%	50V
C453	1-136-165-00	MYLAR	0.1uF	5.00%	50V
C454	1-136-165-00	MYLAR	0.1uF	5.00%	50V
C455	1-126-795-11	ELECT	10uF	20.00%	50V
C456	1-115-871-11	ELECT	1uF	20.00%	50V
C457	1-115-870-11	ELECT	0.47uF	20.00%	50V
C458	1-126-795-11	ELECT	10uF	20.00%	50V
C459	1-137-194-81	MYLAR	0.47uF	5.00%	50V
C461	1-104-664-11	ELECT	47uF	20.00%	16V
C462	1-126-960-11	ELECT	1uF	20.00%	50V
C463	1-136-153-00	FILM	0.01uF	5%	50V
C464	1-130-481-00	MYLAR	0.0068uF	5%	50V
C465	1-130-481-00	MYLAR	0.0068uF	5%	50V
C466	1-136-155-00	FILM	0.015uF	5%	50V
C467	1-126-961-11	ELECT	2.2uF	20.00%	50V
C468	1-137-150-11	FILM	0.01uF	5.00%	100V
C471	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C481	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C482	1-126-382-11	ELECT	100uF	20.00%	10V
C483	1-163-251-11	CERAMIC CHIP	100PF	5.00%	50V
C485	1-130-483-00	MYLAR	0.01uF	5%	50V
C486	1-126-795-11	ELECT	10uF	20.00%	50V
C487	1-124-282-00	ELECT	22uF	20.00%	16V
C488	1-137-427-11	MYLAR	120PF	5.00%	50V

Ref. No.	Part No.	Description			Remarks
C489	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C490	1-162-209-31	CERAMIC	27PF	5.00%	50V
		< CONNECTOR >			
CN401	1-784-734-11	CONNECTOR, FFC 12P			
* CN402	1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P			
CN403	1-784-747-11	CONNECTOR, FFC 25P			
CN404	1-568-826-11	CONNECTOR, FFC 7P			
		< DIODE >			
D471	8-719-911-19	DIODE 1SS133T-72			
D472	8-719-200-82	DIODE 11ES2-TA2B			
		< IC >			
IC401	8-759-495-26	IC HA12215F			
IC431	8-759-111-44	IC uPC4570C-1			
IC432	8-759-143-54	IC uPC1330HA			
		< COIL >			
L437	1-410-780-11	INDUCTOR	27MH		
L461	1-414-193-41	INDUCTOR	220uH		
L462	1-414-193-41	INDUCTOR	220uH		
L487	1-410-780-11	INDUCTOR	27MH		
		< TRANSISTOR >			
Q461	8-729-801-93	TRANSISTOR	2SD1387-34-TP		
Q462	8-729-142-46	TRANSISTOR	2SC2001TP-LK		
Q463	8-729-142-46	TRANSISTOR	2SC2001TP-LK		
Q471	8-729-900-80	TRANSISTOR	UN4211-TA		
Q472	8-729-116-59	TRANSISTOR	2SB1068TP		
Q473	8-729-900-80	TRANSISTOR	UN4211-TA		
Q474	8-729-140-04	TRANSISTOR	2SB1116-TP-LK		
		< RESISTOR >			
R401	1-249-435-11	CARBON	33K	5%	1/4W
R402	1-249-421-11	CARBON	2.2K	5%	1/4W F
R403	1-247-807-31	CARBON	100	5%	1/4W
R405	1-249-421-11	CARBON	2.2K	5%	1/4W F
R406	1-249-428-11	CARBON	8.2K	5%	1/4W F
R407	1-249-428-11	CARBON	8.2K	5%	1/4W F
R408	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R409	1-249-433-11	CARBON	22K	5%	1/4W
R410	1-247-862-11	CARBON	20K	5%	1/4W
R411	1-247-903-00	CARBON	1M	5%	1/4W
R412	1-247-884-11	CARBON	160K	5%	1/4W
R413	1-247-886-11	CARBON	200K	5%	1/4W
R415	1-249-429-11	CARBON	10K	5%	1/4W
R416	1-249-432-11	CARBON	18K	5%	1/4W
R417	1-249-429-11	CARBON	10K	5%	1/4W
R418	1-249-417-11	CARBON	1K	5%	1/4W F
R419	1-216-111-00	METAL CHIP	390K	5%	1/10W
R421	1-249-422-11	CARBON	2.7K	5%	1/4W F
R422	1-249-428-11	CARBON	8.2K	5%	1/4W F
R424	1-216-073-00	METAL CHIP	10K	5%	1/10W
R431	1-216-099-00	METAL CHIP	120K	5%	1/10W
R432	1-216-033-00	METAL CHIP	220	5%	1/10W
R433	1-216-081-00	METAL CHIP	22K	5%	1/10W
R434	1-216-107-00	METAL CHIP	270K	5%	1/10W
R435	1-216-075-00	METAL CHIP	12K	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R436	1-249-409-11	CARBON	220	5%	1/4W F
R437	1-249-430-11	CARBON	12K	5%	1/4W
R439	1-249-409-11	CARBON	220	5%	1/4W F
R440	1-216-081-00	METAL CHIP	22K	5%	1/10W
R451	1-249-435-11	CARBON	33K	5%	1/4W
R452	1-249-421-11	CARBON	2.2K	5%	1/4W F
R453	1-247-807-31	CARBON	100	5%	1/4W
R455	1-249-421-11	CARBON	2.2K	5%	1/4W F
R456	1-249-428-11	CARBON	8.2K	5%	1/4W F
R457	1-249-428-11	CARBON	8.2K	5%	1/4W F
R458	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R459	1-249-435-11	CARBON	33K	5%	1/4W
R461	1-249-429-11	CARBON	10K	5%	1/4W
R462	1-249-432-11	CARBON	18K	5%	1/4W
R463	1-249-432-11	CARBON	18K	5%	1/4W
R464	1-212-851-00	FUSIBLE	5.6	5%	1/4W
R465	1-212-851-00	FUSIBLE	5.6	5%	1/4W
R471	1-249-437-11	CARBON	47K	5%	1/4W
R472	1-249-417-11	CARBON	1K	5%	1/4W F
R475	1-249-415-11	CARBON	680	5%	1/4W F
R476	1-249-421-11	CARBON	2.2K	5%	1/4W F
R481	1-216-099-00	METAL CHIP	120K	5%	1/10W
R482	1-216-033-00	METAL CHIP	220	5%	1/10W
R483	1-216-081-00	METAL CHIP	22K	5%	1/10W
R484	1-216-107-00	METAL CHIP	270K	5%	1/10W
R485	1-216-075-00	METAL CHIP	12K	5%	1/10W
R486	1-249-409-11	CARBON	220	5%	1/4W F
R487	1-249-430-11	CARBON	12K	5%	1/4W
R491	1-216-077-91	RES-CHIP	15K	5%	1/10W
R492	1-216-083-00	METAL CHIP	27K	5%	1/10W
R493	1-216-091-00	METAL CHIP	56K	5%	1/10W
R494	1-216-073-00	METAL CHIP	10K	5%	1/10W
R495	1-216-073-00	METAL CHIP	10K	5%	1/10W
		< VARIABLE RESISTOR >			
RV401	1-241-764-11	RES, ADJ, CARBON 10K			
RV431	1-241-762-11	RES, ADJ, CARBON 2.2K			
RV440	1-241-768-11	RES, ADJ, CARBON 220K			
RV451	1-241-764-11	RES, ADJ, CARBON 10K			
RV481	1-241-762-11	RES, ADJ, CARBON 2.2K			
RV490	1-241-768-11	RES, ADJ, CARBON 220K			
		< TRANSFORMER >			
T461	1-423-980-11	TRANSFORMER, BIAS OSCILLATION			
		< JUMPER RESISTER >			
JR491	1-216-295-91	SHORT	0		

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	A-4428-957-A	TRANS BOARD, COMPLETE (HK)			
		**********			
	A-4473-394-A	TRANS BOARD, COMPLETE (EXCEPT HK)			
		**********			
		< CAPACITOR >			
C971	1-136-165-00	MYLAR	0.1uF	5.00%	50V
C972	1-126-936-11	ELECT	3300uF	20.00%	16V
C973	1-136-165-00	MYLAR	0.1uF	5.00%	50V
C974	1-126-968-11	ELECT	100uF	20.00%	50V
C975	1-126-964-11	ELECT	10uF	20.00%	50V

TRANS

Ref. No.	Part No.	Description			Remarks
C976	1-126-964-11	ELECT	10uF	20.00% 50V	
C981	1-136-165-00	MYLAR	0.1uF	5.00% 50V	
C982	1-115-364-11	ELECT	22000uF	20.00% 16V	
C983	1-136-165-00	MYLAR	0.1uF	5.00% 50V	
C984	1-126-946-11	ELECT	6800uF	20.00% 25V	
C985	1-136-165-00	MYLAR	0.1uF	5.00% 50V	
C986	1-126-943-11	ELECT	2200uF	20.00% 25V	
⚠C991	1-113-925-11	CERAMIC	0.01uF	20.00% 250V	
C992	1-126-962-11	ELECT	3.3uF	20.00% 50V	
		< CONNECTOR >			
CN991	1-564-321-00	PIN, CONNECTOR 2P			
* CN992	1-564-321-21	PIN, CONNECTOR 2P			
* CN993	1-564-508-11	PLUG, CONNECTOR 5P			
* CN994	1-564-528-11	PLUG, CONNECTOR 13P			
		< DIODE >			
D971	8-719-200-82	DIODE 11ES2-TA2B			
D972	8-719-200-82	DIODE 11ES2-TA2B			
D973	8-719-200-82	DIODE 11ES2-TA2B			
D974	8-719-200-82	DIODE 11ES2-TA2B			
D975	8-719-200-82	DIODE 11ES2-TA2B			
D976	8-719-200-82	DIODE 11ES2-TA2B			
D977	8-719-200-82	DIODE 11ES2-TA2B			
D978	8-719-200-82	DIODE 11ES2-TA2B			
D979	8-719-983-86	DIODE MTZJ-T-72-33A			
D980	8-719-947-12	DIODE MTZJ-T-72-4.7A			
D981	8-719-028-23	DIODE D3SBA20-4101			
D982	8-719-200-82	DIODE 11ES2-TA2B			
D983	8-719-200-82	DIODE 11ES2-TA2B			
D984	8-719-200-82	DIODE 11ES2-TA2B			
D985	8-719-200-82	DIODE 11ES2-TA2B			
D991	8-719-911-19	DIODE 1SS133T-72			
D992	8-719-911-19	DIODE 1SS133T-72			
D993	8-719-911-19	DIODE 1SS133T-72			
		< TRANSISTOR >			
Q971	8-729-018-59	TRANSISTOR	2SB1375(LB-SONY)		
Q972	8-729-922-37	TRANSISTOR	2SD2144S-TP-UVW		
Q973	8-729-922-37	TRANSISTOR	2SD2144S-TP-UVW		
Q974	8-729-900-63	TRANSISTOR	UN4112-TA		
Q975	8-729-900-63	TRANSISTOR	UN4112-TA		
Q976	8-729-620-05	TRANSISTOR	2SC2603TP-EF		
Q991	8-729-620-05	TRANSISTOR	2SC2603TP-EF		
		< RESISTOR >			
⚠R971	1-219-153-11	FUSIBLE	10	5% 1/4W	
R972	1-260-103-11	CARBON	2.2K	5% 1/2W	
R973	1-249-429-11	CARBON	10K	5% 1/4W	
R974	1-249-413-11	CARBON	470	5% 1/4W	F
R975	1-249-413-11	CARBON	470	5% 1/4W	F
R976	1-249-429-11	CARBON	10K	5% 1/4W	
R977	1-249-429-11	CARBON	10K	5% 1/4W	
R978	1-249-441-11	CARBON	100K	5% 1/4W	
⚠R981	1-219-120-11	FUSIBLE	0.15	5% 1/4W	
⚠R982	1-219-121-11	FUSIBLE	0.22	5% 1/4W	
⚠R983	1-219-121-11	FUSIBLE	0.22	5% 1/4W	
R991	1-249-429-11	CARBON	10K	5% 1/4W	
R992	1-249-429-11	CARBON	10K	5% 1/4W	
R993	1-249-417-11	CARBON	1K	5% 1/4W	F
R994	1-249-417-11	CARBON	1K	5% 1/4W	F
R995	1-249-424-11	CARBON	3.9K	5% 1/4W	F
		< RELAY >			
⚠RY991	1-755-276-11	RELAY, POWER			
		< TRANSFORMER >			
⚠T900	1-433-969-11	TRANSFORMER, POWER (EXCEPT HK,CH)			
⚠T900	1-433-970-11	TRANSFORMER, POWER (HK,CH)			
T992	1-424-485-11	FILTER, LINE			
**********					
		MISCELLANEOUS			
		**********			
5	1-791-693-11	WIRE(FLAT TYPE) (12 CORE)			
12	1-791-696-11	WIRE(FLAT TYPE) (25 CORE)			
18	1-777-240-11	WIRE(FLAT TYPE) (21 CORE)			
19	1-791-211-11	WIRE(FLAT TYPE) (23 CORE)			
20	1-773-213-11	WIRE(FLAT TYPE) (25 CORE)			
62	1-773-381-11	WIRE(FLAT TYPE) (35 CORE)			
102	1-791-695-11	WIRE (FLAT TYPE) (19 CORE)			
⚠105	1-575-651-11	CORD, POWER			
109	1-791-694-11	WIRE (FLAT TYPE) (15 CORE)			
110	1-693-473-21	TUNER			
112	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (HK,UK)			
HR901	1-500-502-11	HEAD, OVER LIGHT			
S102	1-762-148-21	SWITCH, PUSH (2 KEY)			
⚠T901	1-435-447-11	TRANSFORMER, POWER (HK,CH)			
⚠T901	1-435-555-11	TRANSFORMER, POWER (EXCEPT HK,CH)			
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		**********			
		HARDWARE LIST			
		**********			
#1	7-685-647-79	SCREW +BVTP 3X10 TYPE2 TT(B)			
#2	7-685-646-79	SCREW +BVTP 3X8 TYPE2 TT(B)			
#3	7-685-650-91	SCREW +BVTP 3X16 TYPE2 TT(B)			
#4	7-685-533-19	SCREW +BTP 2.6X6 TYPE2 N-S			
#5	7-627-852-08	SCREW,PRECISION +P 1.7X2.5			
#6	7-621-772-40	SCREW +B 2X8			
#7	7-621-772-20	SCREW +B 2X5			
#8	7-685-133-19	SCREW (DIA. 2.6) (IT3B)			
#9	7-685-871-01	SCREW +BVTT 3X6 (S)			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	以阴影和 ⚠ 标志来识别的零部件，在安全方面具有关键性，因此只能以规定号码的零部件来更换。

Sony Corporation
Home Audio Division Company

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